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Digital Divide: The Roles of Access and Self-Efficacy On College Readiness

Dissertation

Presented in Partial Fulfillment of the Requirements for the Degree of

Doctor of Education

Lynn University

By

Kristen Rojas

2013

Order Number: \_\_\_\_\_

**DIGITAL DIVIDE: THE ROLES OF ACCESS AND SELF-EFFICACY ON COLLEGE  
READINESS**

Rojas, Kristen, Ed.D.

Lynn University, 2013

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## ABSTRACT

### KRISTEN ROJAS: DIGITAL DIVIDE: THE ROLES OF ACCESS AND SELF-EFFICACY ON COLLEGE READINESS

This study examined how the roles of computer access, demographics, and self-efficacy on college readiness mastery for high school seniors in an affluent suburb in Southeastern Florida. Data was collected from an online survey using a quasi-experimental setting and a convenient sample of 322 high school seniors at a single public high school location. Statistical analysis was done using SPSS software to determine if differences exist between access, demographics, and self-efficacy contribute to college readiness mastery.

Results from this study revealed that a digital divide existed; also, findings within groups were different for those with household income over \$100,000, those with computer access, and those who received free/reduced lunch and according to gender. These findings showed a strong difference contributing to college readiness mastery. The greatest difference was displayed in the range of household income of \$100,000.00 and above within all groups. Also, computer access, free/reduced lunch and gender presented as a nominal variable of yes/no were different. The mean statistic of gender showed females with a difference for college readiness mastery, but these independent variables may lead to Type II errors. Self-efficacy did not influence college readiness mastery in this study.



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## CHAPTER ONE: INTRODUCTION

For the last century, cognitive measures have been the acceptable practice in education for assessing student knowledge and ability (Conley, 2008). In fact, educators have established a common hierarchy ranking cognitive skills at the top and metacognitive skills at the bottom (Conley, 2013). Contemporary studies continue to evolve and their outcomes advance our understanding about the importance of metacognitive skills, and new approaches to develop other alternative metacognitive assessments for college readiness. Also, these findings would be able to evaluate our diverse student potential using a different lens. The purpose of this present study is to explore the use of metacognitive assessments, such as access to computers, demographic variables, and self-efficacy, to the commonly acceptable cognitive assessments (i.e. ACT, SAT, PERT), which are used to determine college readiness, would be able to provide a greater indicator of student college ready mastery. The metacognitive assessments selected for this study are student technology access, demographic categories (gender, ethnicity, and socioeconomic status), and self-efficacy status.

A cornerstone of this study began from reading a recent journal article which discussed the important role of high schools in partnership with universities in supporting the needs of students by addressing opportunities to learn more about technology, enhancing student motivation, and knowledge of computing (Goode, 2010). Goode (2010) concluded that the benefit for the application of technology access is “. . . to address the severe imbalance of high-status knowledge and to prepare all of its students for the digital demands of college life and civic participation.” This peer reviewed journal article originates from Joanna Goode, 2004 dissertation, “Mind the Gap” to

provide empirical evidence representative of the digital divide, extending a unique challenge to prepare high school students utilizing a technology identity lens at the secondary setting. Goode (2004), recommended further research to determine the effect of the digital divide on high school students' technology access.

As previously stated, the results and implications of Goode's (2010) article led to the digital divide as a focus of this research study. The popularly cited divide of digital equity of access is relevant to student achievement assessed by traditional college readiness assessments. This study will identify the specific challenge of student technology access and the influence of the digital divide effect on high school seniors preparing for a cognitive academic assessment used to determine college readiness mastery to transition from high school to college. It is believed that this study would result in measurable quantifiable data exploring senior high school students' technology roles of access and document differences to college readiness mastery.

Documenting the evidence that the digital divide is directly related to digital access is recorded by distinguished journals. Also, to clarify the empirical evidence reviewed for the purpose of this study is the implication of digital access (Goode, 2010) as a role for student college readiness mastery. Goode's (2004) study stated that high school students will strongly benefit from technology access and these benefits will continue at postsecondary institutions.

In addition, the lists of journals represented have examined the existence of the digital divide which identifies the challenge of providing students equal access to technology at home and school emphasizing possible differences for student learning outcomes. Moreover, the major identified role in this research study specifically, Wang,



McLee, and Kuo (2011) who analyzed digital divide studies from 2000-2009 and identified the journals that most often cited them (see Table 1). The top journals that cited them most often were *Telecommunications Policy*, *Information Society*, and *JAMA-Journal of the American Medical Association*. Significant to this research study, *New Media & Society* and *Communications of the ACM* rounded out the top five.

Table 1 Journals Citing Digital Divide Studies 2000-2009

Journals	Citations
<i>Telecommunications Policy</i>	318
<i>Information Society</i>	202
<i>JAMA-Journal of the American Medical Association</i>	156
<i>New Media &amp; Society</i>	143
<i>Communications of the ACM</i>	137
<i>Communications Research</i>	124
<i>Journal of the American Medical Association</i>	124
<i>British Medical Journal</i>	123
<i>Journal Medical Internet Research</i>	119
<i>Journal Medical Internet Research</i>	108

Other highly cited digital divide studies include Norris's *Digital divide civic*, Warschauer's *Technology and Social Inclusion: Rethinking the Social Divide* and Van dijk's, *The digital divide as a complex and dynamic phenomenon*. In addition, Wang et al. (2011) noted that the top five most cited scholars between 2000 and 2004 were Castells, Norris, Hoffman, Kraut and Katz, (see Table 2), and between 2005-2009 were Hill, Hargittai, Norris, Warchauer, and Castells (see Table 3).

Table 2

## Top Five Cited Digital Divide Authors, 2000-2004

Author	Frequency	Author	Frequency
Castells	39	Wellman	23
Norris	31	Parker	19
Hoffman	30	Bimber	18
Kraut	27	Eysenbach	18
Katz	24	Warschauer	18

Source: Wang, McKlee, and Kuo, 2011.

Table 3

## Highly Cited Authors 2005-2009

Author	Frequency	Author	Frequency
Hargittai	102	Vandijk	65
Norris	96	Dimaggio	61
Warchauer	88	Selwyn	60
Castells	77	Livingstone	59
Fox	69	Lenhart	52

Source: Wang, McKlee, and Kuo, 2011.

Another example of a recent research study findings stated that technology access could cause deficient outcomes of student enrolled in elective and core classes online in a community college in Washington (Gladieux & Swail, 1999; Jun, 2005; Liu, Gomez, Khan, & Yen, 2007; Muse, 2003; Stewart, Bachman, & Johnson, 2010). This study stated that a potential cause for differences in results may lie in the different student populations and course contexts examined in each study, which is meaningful and directly pertains to understanding student differences to achieve college ready mastery. For example, populations of students with more extensive exposure to technology or those who have been taught skills in terms of time management and self-directed learning may adapt more readily to online learning than others (Gladieux & Swail, 1999; Jun, 2005; Liu, Gomez, Khan, & Yen, 2007; Muse, 2003; Stewart, Bachman, & Johnson,

2010). These study components correlate directly to the variables which were used in the research study to quantify the relationship and impact on college ready assessments.

To further measure college-ready assessments between student technology access, demographic differences, and self-efficacy, Goode (2004) reported that students who graduate from high school will be exposed to a vastly different skill set necessary to transition successfully to the postsecondary arena (Goode, 2004). Also, Miller, Coombs, and Fuqua's 1999 study of self-efficacy was also relevant and important to this research study's goal of investigating how self-efficacy affects college readiness. Goode's (2004) study stated that high school students will strongly benefit from technology access and these benefits will continue at postsecondary institutions.

In sum, this research study will analyze the role of the digital divide affecting students' college readiness assessment cut scores defined by the Florida Department of Education, and the impact of student demographics and self-efficacy status determining academic potential for students in their final year of high school.

### **Statement of the Problem**

The research study used a quantitative method to analyze the relationships of the roles of the digital divide on student technology access, demographic differences of gender, ethnicity, socioeconomic status, and self-efficacy status of high school seniors, which impact student college readiness assessments. Will these identified roles influence student success on the Florida Department of Education recommended college readiness level assessments? To answer this question this research study correlated student access to technology, differences of demographic attributes of gender, ethnicity, socioeconomic status and self-efficacy in order to help clarify the relationships between academic,

cognitive and social variables which are assumed to contribute to college ready assessment outcomes. To conclude, this research study contributes valid and reliable student data to identify the role of student technology access, demographic differences and self-efficacy to student college readiness assessments verified by Florida state statutes.

### **Significance of the Study**

A review of research data has consistently indicated that cognitive measures of academic performance, such as high school grades and test scores, are highly predictive of grades earned in college, but less so of retention and graduation, (e.g., Robbins, Allen, Casillas, Peterson & Le, 2006; Robbins et al., 2004; Schmitt et al., 2009). Moreover, Robbins et al.'s 2004 findings showed that correlations between cognitive measures and first year GPA were two to three times greater than between cognitive measures and retention. Burton and Ramis' 2001 results demonstrated a combination of admission test scores, grades, and academic rigor offer the best predictors of graduation, but the correlations are approximately half as large as those found in predicting college grades. To connect this prior research with this study adds to the evidence for greater analysis of other comprehensive variables, such as the student differences presented in this paper.

Likewise, another study was analyzed using community college students enrolled in distance education course, and asserted a contrast to the large volumes of studies examining gender, ethnicity, and age as predictors of online success, very few studies (e.g., Hoskins & Hooff, 2005; Figlio, Rush, & Yin, 2010) have examined the role of students' pre-existing academic ability. Yet, students with weaker academic preparation may also have insufficient time management and self-directed learning skills, both of

which are thought to bring critical to success in online and distance education (e.g., Bambara, Harbour, & Davies, 2009; Ehrman, 1990; Eisenberg & Dowsett, 1990; Liu et al., 2007). These findings led directly to this research study's independent variable and importance of self-efficacy status. This independent variable, self-efficacy, was as an alternative metacognitive assessment to further examine a relationship to college-readiness required standards. These student-efficacious traits identify social adjustment, whether students integrate socially and academically in their institutions and their level of engagement, and are also strong predictors of persistence. Furthermore, student motivation, attendance, and engagement in learning are related to outcomes of graduation (Tinto, 1987).

The dependent variable college readiness was how holistic students' attributes were measured and was based on state college-ready assessments by the Florida Department of Education<sup>1</sup>.

This research study used a survey and the Self-Efficacy Inventory (SELF-A) to establish a compilation of data for identifying student Internet and computer access, demographic differences of gender, ethnicity, and socioeconomic status measured against Florida college readiness cut scores of ACT, SAT, and Postsecondary Education Readiness Test (PERT) scores (see Table 4). The student technology access and demographic differences survey instrument provided student personal information and evidence to evaluate student technology access and address differences of gender, ethnicity, and socioeconomic status.

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<sup>1</sup>Florida State Board Rule 6A-10.0315

**Table 4 Florida Department of Education Cut Scores, 2012-2013**

Placement	Writing cut score	Reading cut score	Math cut score
PERT	99	104	113
Accuplacer	83	83	72
SAT-I	440	440	440
ACT	17	18	19

This research study provides information to target state policymakers to focus awareness of the role the digital divide influences student computer access at home and during school affecting overall mastery of college readiness skills and the acquisition of technology familiarity. This theory is supported by a recent online study at a community college that revealed patterns suggesting that performance gaps between key demographic groups already observed in face-to-face classrooms include gaps between male and female students and gaps between White and ethnic minority students are exacerbated in online courses (Xu and Jaggars, 2013). This study's implications incite a further divide and imply that the continued expansion of online learning could strengthen, rather than ameliorate, educational inequity.

This research study provides information to target holistic college admissions officers to include the self-efficacy status and further analyze the significant relationship of the roles technology access and student differences influence first-year college student success. The study contributes further to the literature to bridge the digital divide and analyze student differences of gender, ethnicity, and socioeconomic status related to students who will be able to attain success in high school by achieving on college readiness assessments. Furthermore, this research study adds to contemporary studies of high school students' transitions from secondary to post-secondary institutions and academic expectations. The outcome of student data from this study illuminates the

importance of student participation in their education status and utilizing innovative technology access to increase academic achievement and contribute positively to become a responsible and productive member of society.

In this study the selected high school students' college readiness skills was measured by the accepted protocol of the Florida Department of Education College Readiness provided by the guidelines published by the Palm Beach School District. Also, "college and career" ready demonstrates student mastery of the Florida Postsecondary Readiness Competencies in English and mathematics that have been identified through a cross-sector collaborative effort by Florida's K12, college, and university faculty. Students demonstrate proficiency by achieving passing-level scores in reading, writing and mathematics on the PERT or an approved alternative. Students scoring below state-adopted common cut scores in these discipline areas are required to enroll in and successfully complete developmental education (remedial) courses in the areas of their deficiencies prior to enrollment in postsecondary, general education, college-credit courses.

Higher levels of demonstrated competence in mathematics, language arts, the natural sciences, and the social sciences increase the options available to a student (e.g., selective university enrollment, high-skill occupation) and the likelihood that a student will succeed in postsecondary education and the skilled workforce. These higher levels of competency may be measured by SAT and/or ACT scores, in addition to earning postsecondary credits through Advanced Placement (AP), International Baccalaureate (IB), Dual Enrollment, or Advanced Inquiry Cambridge Education (AICE) programs; or by earning state-approved industry certifications.

### **Conceptual Framework Component**

Relevant research of a longitudinal study focused on the central role played by perceived self-regulatory efficacy in one's academic self-development and functioning (Caprara et al 2008) adapted from the capacity to regulate one's thoughts, motivation, affect, and action through self-reactive influence constitutes one of the core properties of human agency within the conceptual framework of social cognitive theory (Bandura, 2006b). Self-regulatory efficacy was selected as a key factor because of its growing primacy in contemporary life. Information technologies are globalizing knowledge and altering educational systems (Bandura, 2002).

The literature review indicated that in the past, students' educational development depended on the quality of the schools in which they were enrolled; however, students can now exercise greater personal control over their own learning, independently of time and place, through multimedia instruction on the Internet (Caprara et al 2008). Empirical evidence (see Figure 1) further stating, in this new era, the construction of knowledge will rely increasingly on electronic inquiry, and relevance in research in self-instruction through the Internet, findings of students with high efficacy for self-regulated learning are the ones, who make the best use of Internet-based instruction (Debowski, Wood, & Bandura, 2001; Joo, Bong, & Choi, 2000). Moreover, the accelerated pace of social, informational, and technological change is placing a premium on capability for self-directed learning and self-renewal resulting in paradigm shift that students will have to educate themselves throughout their lifetime (Caprara et al 2008).



Figure 1 Digital Competence Framework

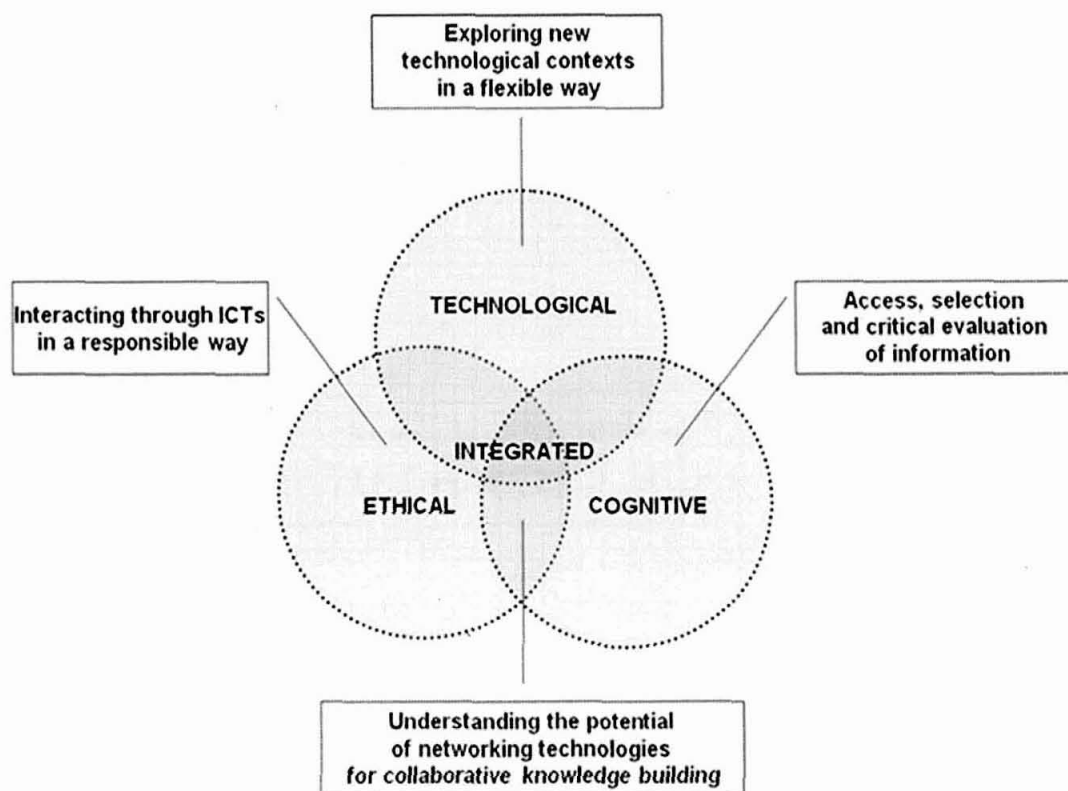


Figure 1: Digital competence framework (from Calvani et al., 2009, p. 162)

### Purpose of the Study

The purpose of this study was to examine evidence for the existence of the digital divide in computer and Internet access, student demographics and self-efficacy factors that influence digital access for high school seniors. Also, this research study explored if access and self-efficacy influence college readiness skills. This study was conducted at an “A” level Florida comprehensive public high school with a student population of approximately 3,000. The “A” designated recognition establishes that this comprehensive high school meets the State of Florida Department of Education criteria and standards annual evaluation. The research focused on whether college readiness skills are influenced by digital access at home and school. A determining relationship

between home information, communication technology access, socioeconomic status, and student self-efficacy were contributing factors for influencing college readiness measured by the Florida Department of Education.

The findings of this study included an essential question addressed by this research, “Do demographic factors, limited technology access, and low self-efficacy status impact student achievement, and as a result diminish opportunity for student college readiness?”

Florida state policy makers support state policies 1008.30(3) F.S. and State Board Rule 6A-10.0315<sup>2</sup>, and these are currently implemented in statewide secondary education institutions, which are semester courses in reading, writing, and mathematics that have been developed to meet the Florida postsecondary preparatory instruction requirement. Present-day high school students have virtual classes, online testing, social network collaboration, and online research technology, combined with student grade monitoring of Edline, which have evolved to become the expected norm for parents, students, and teachers to digitally access academic information necessary to achieve college readiness. The observed rapid implementation of digital materials presented to current high school students, and further mandates by Florida state guidelines that high school students will need to take at least one online course from Florida Virtual School, increases the need for student access. Also, college readiness skills are determined by a college placement test, such as the PERT and many others such as SAT, ACT, and FCAT, which are currently taken at computer stations generated as an online test. Policy makers continue to

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<sup>2</sup>. This statute requires to schools to evaluate the college readiness of all students before the beginning of grade twelve, regardless of their postsecondary plans. The statute, also, states schools shall administer the Postsecondary Education Readiness Test (PERT) or equivalent test identified in state Board Rule 6A-10.0315, F.A.C., to all students who score at Level two or Level three on the reading portion of the grade ten FCAT or Level two, three, or four on the mathematics assessments (2011 HB 1255).

mandate education reform models, which include 21st-century skills to encourage media access to generate a solution for many, but not all. Yet, the responsibility of public education is to ensure equal opportunity for technology access at home and school and to look beyond socioeconomic status and regulate student participation to acquire college ready status.

### **Research Questions**

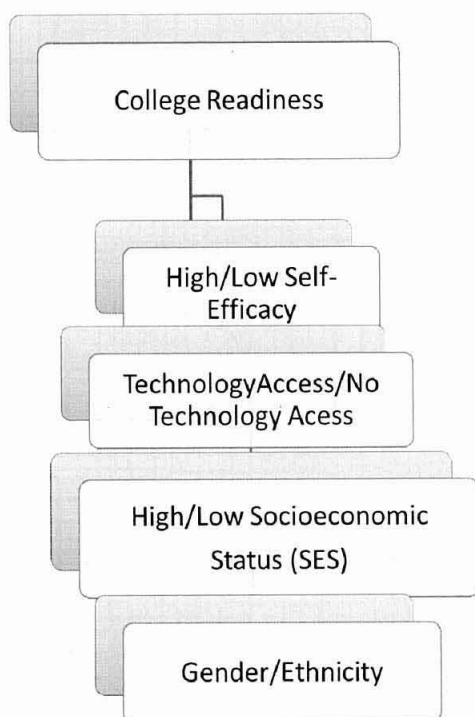
This study was designed to determine if student technology access; demographic differences of gender, ethnicity, and socioeconomic status; and self-efficacy status influence college readiness (see Figure 2). It was believed that results of this research study would allow school leadership to focus on the variables displaying the closest correlation to influence college readiness. The research study collected evidence from a student demographic survey and a self-efficacy form to examine the following questions:

Q1. Is there a difference in college-ready mastery based on student computer and Internet access?

Q2: Is there a difference among student demographic factors of gender, ethnicity and socioeconomic status and college readiness?

Q3: Is there a relationship between student self-efficacy and college readiness?

**Figure 2 Analysis of Student Demographic Differences, Technology Access, and Self-Efficacy On College Readiness**



### **Rationale**

The goal of this research study was to contribute to the state of Florida's initiative to further analyze student technology access as a contributing reason to achieve college readiness skills while in the state of Florida public high schools. Florida's innovation to initiate college readiness has been addressed by the Developmental Education Initiative (DEI). This state innovation is an extension of the national initiative Achieving the Dream. The national initiative began in 2009, with six states that joined together to focus on policies to support dramatic improvements for students whose assessment scores indicated the need for remediation. These six states—Connecticut, Florida, North Carolina, Ohio, Texas, and Virginia—are committed to an aggressive policy and

capacity-building agenda to support their community colleges' efforts to improve success rates for students in need of developmental education, as stated in the *Developmental Education Initiative: State Policy Framework and Strategy*. This publication further stated that "Additionally, students with particularly low placement scores are provided with course-based interventions when they often require more accelerated instruction and comprehensive support services in order to reach college readiness." Therefore, the implemented interventions for high school students with low placement scores, reinforced by the Florida state mandate, requires student enrollment in developmental intensive classes. As a result of this Florida initiative this research study examined student technology access, student demographics and a self-efficacy inventory as a factor for student success to be measured by college readiness assessment required by the Florida Department of Education.

To develop further understanding of the presented need for student Internet and computer access, prior knowledge of the digital divide phenomenon was necessary to communicate the need for student access to influence student achievement in the contemporary classroom curriculum and 21st-century skills expectations. The digital divide began to surface in literature during the mid-1990s, as the U.S. National Telecommunications and Information Administration popularized the term to describe the societal split between those with and those without access to computers and the Internet (Warschauer, 2003). Likewise, the National Center for Education Statistics (NCES) reported that computer and Internet use by students in 2003 revealed that the digital divide continued to exist, particularly along demographic and socioeconomic lines (National Center for Education Statistics, (NCES), 2006) . This research study examined

the equity of education based on the digital divide and the effects on high school seniors illustrated by gathering data on current students enrolled in their senior year.

Other relevant longitudinal studies, (Pajares, 1996; Skaalvik, 1997; Skinner, 1990) including two incremental validity studies, (Gore, Jr. 2006) also identified self-efficacy as a major component of social and cognitive development focused on teen adolescence and correlated to student achievement. This study analyzed self-efficacy of a high school senior because this developmental stage is a stressful transitional phase that presents a host of new challenges (Bandura, 2006a; Graber, Brooks-Gunn, & Petersen, 1996; Pajares & Urdan, 2006).

To explain this study's focus on adolescents, it is necessary to understand significant conditions to manage major biological, educational, and social role transitions simultaneously. Learning how to deal with adolescent changes, differently structured school environments, enlarged peer networks, and emotionally invested partnerships becomes important to teens. Moreover, this is the time when the roles of adulthood must begin to be addressed in almost every dimension of life. Adolescents must also begin to consider seriously what they want to do with their lives (Bandura, Barbaranelli, Caprara, & Pastorelli, 2001). Teens at this stage have to master many new skills and the ways of adult society, and the way in which adolescents develop and exercise their personal efficacy during this period can play a key role in setting the course their life paths take (Bandura, 2006b; Pajares & Urdan, 2006).

In addition, other empirical evidence quantifies self-regulatory efficacy to raise academic goals and aspirations, personal standards for the quality of work considered to be acceptable, and beliefs in one's capabilities for academic achievement after controls

for instructional level, prior academic performance, and relevant aptitude (Zimmerman & Bandura, 1994; Zimmerman et al., 1992). To add further depth and context to this research study a self-efficacy inventory was used to measure student achievement on college-ready assessments. Zimmerman (1990) has been the leading expert of an expanded model of academic self-regulation. In social-cognitive theory, people must develop skills for regulating the motivational, affective, and social determinants of their intellectual functioning as well as cognitive aspects Bandura (1993). Also, Zimmerman and Martinez-Pons (1986) showed that good self-regulators do better academically than poor self-regulators. This was confirmed in a study by Zimmerman, Bandura, and Martinez-Pons (1992).

The present study also connected the current Florida Department of Education definition of high school students' college readiness, which is addressed in the Florida statute 1008.30(3) F.S. This statute requires schools to evaluate the college readiness of all students before the beginning of grade 12, regardless of their postsecondary plans. The statute states that schools shall administer the PERT or equivalent test identified in state Board Rule 6A-10.0315, F.A.C., to all students who score at Level 2 or Level 3 on the reading portion of the grade 10 FCAT or Level 2, 3, or 4 on the mathematics assessments (2011 HB 1255). Moreover, Florida high schools are required to advise students of any identified deficiencies and require postsecondary preparatory instruction for students who do not meet the state-established college-ready score in reading, writing, and mathematics. These identified students must complete postsecondary preparatory instruction in their senior year. This is a Florida high school graduation requirement for students whose PERT scores indicate a need for additional preparation to be ready for

college-level work. Regardless of postsecondary preparatory requirements, students must also meet all other graduation requirements. Therefore, the purpose of the Florida postsecondary preparatory instruction requirement is to prepare students for entry level college credit courses, gainful employment, and to reduce the number of high school graduates needing college remediation before enrolling in college-level courses.

### **Assumptions**

The research study assumed that the data collected would represent the students' access to technology and self-efficacy at the site of implementation accurately and concisely. The quantitative design selected for this research had some limitations because it was a convenient sample in a quasi-experimental setting and unable to control for socioeconomic status (SES). Also, the implementation of this research study could be generalizable due to the limited sample size student population administered in one location.

### **Scope and Limitations of the Study**

The research project included a convenient sample of high school students in their senior year at a comprehensive public high school that perpetuates a model of high performance based on rankings from *The Washington Post* and grade ranking from the Florida State Department of Education. The comprehensive high school has approximately 3,000 students with about 28% on free or reduced lunch. The data collected is representative of one very large suburban public comprehensive high school in an affluent area of involved parents and community leaders imposing high expectations for college readiness and enrollment in advanced placement courses. These characteristics representative of this high school illustrate a positive school culture



extending from administrators, teachers, parents, to students collaborating to facilitate positive student outcomes, which may be atypical and therefore this study cannot be generalized. Also, many colleges and universities in Florida have varying entry-level courses, remedial courses, and requirements for entry into the same and different courses (NAGB, 2009; Shaw and Patterson, 2010).

The quantitative research study used a quasi-experimental setting, and implemented an online survey to senior class members. The results were analyzed with SPSS. The descriptive statistics, T-test and ANOVA was selected followed by the Levene test to decide to proceed with post hoc testing. The Levene determines if the two conditions have about the same or different amounts of variability between scores. Next, the T-test will tell us if the Means for the two groups were statistically different (significantly different) or if they were relatively the same. To conclude, there is no statistically significant difference between your two conditions if the Sig (2-Tailed) value is greater than 05. In contrast, if the Sig (2-Tailed) value is less than or equal to .05, one can conclude that there is a statistically significant difference between your two conditions.

## CHAPTER TWO: LITERATURE REVIEW

The evidence presented in recent studies documents that students will make a successful transition to the college environment defined by the function of their readiness—the degree to which previous educational and personal experiences have equipped them for the expectations and demands they will encounter in college (Conley, 2008). In addition, recent research data has consistently indicated that cognitive measures of academic performance, such as high school grades and test scores, are highly predictive of grades earned in college, but less so of retention and graduation, (e.g., Robbins, Allen, Casillas, Peterson & Le, 2006; Robbins et al., 2004; Schmitt et al., 2009) and has identified the key elements to predict student college readiness for success. The focus of critical components for student college readiness is the development of the cognitive and metacognitive capabilities of incoming high school students: analysis, interpretation, precision and accuracy, problem solving, and reasoning, which enables student strengths to be matched to higher education institutions using strategies identified by those who teach entry-level college courses important to college success (Conley, 2003b, 2005; Conley and Bowers, 2008; National Research Council, 2002). This literature review also includes prior empirical evidence identifying the existence of the digital divide phenomenon and how it affects student access to computer and Internet technology. The specific subject area reference to the digital divide amplifies the relevance of this dissertation and considers high school seniors' perspective of their technology access to computers with Internet access.

Research-based contributing factors of student success documented by the social-cognitive lens include a set of academic self-management behaviors leading to this

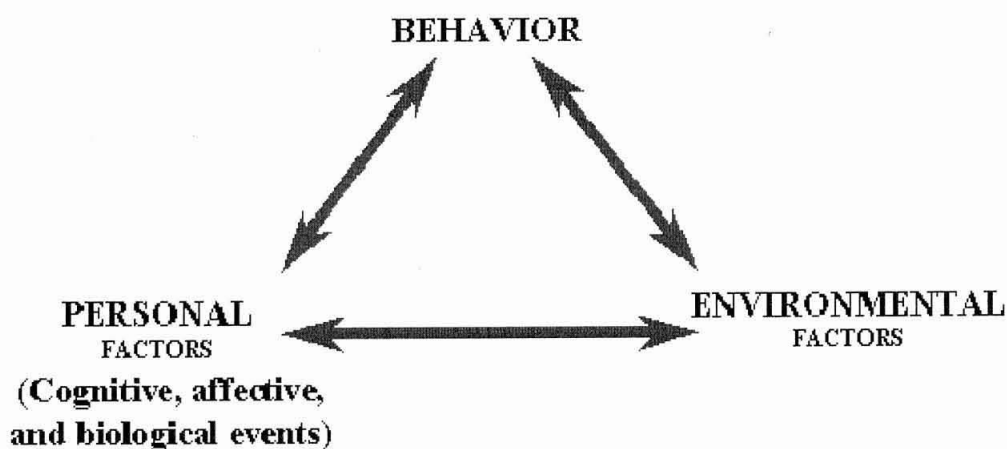
study's inclusion of the Self-Efficacy student inventory. The SELF administers self-reflective admission of academic self-management variables. These inventory domains include time management, strategic study skills, awareness of one's true performance, persistence, and the ability to use study groups. Most college readiness research requires students to demonstrate high degrees of self-awareness, self-control, and intentionality and an inventory of data of self-efficacy factors that influence student success and a long-term vision for a positive career transition after college.

This research study also investigated if student technology access and self-efficacy status influences college readiness skills. The study was conducted at an "A" level Florida comprehensive public high school with a student population of approximately three thousand students. The research provided further data to show if college readiness skills are influenced by technology access at home and school. In addition, this study determined if a relationship between differences of gender, ethnicity, socioeconomic status, and student self-efficacy were contributing factors to college readiness as measured by the Florida Department of Education.

### **Theoretical Framework**

Bandura's 1986 social-cognitive theory of self-efficacy guided the development of the Multidimensional Scales of Perceived Self-Efficacy (MSPSE; Bandura, 1989). According to this theory, self-efficacy perceptions refer to "beliefs in one's capabilities to organize and execute the courses of action required producing given attainments" (Bandura, 1997, p. 3). Bandura (1997) proposed that individuals who perceive themselves as capable will tend to attempt and successfully execute tasks or activities. Self-efficacy studies in education clarify and extend the role of efficacy beliefs as one

mechanism underlying learning strategy approach (Pintrich & DeGroot, 1990), goal setting (Locke & Latham, 1990), persistence (Gorrell & Capron, 1988), and academic success (Schunk, 1985; Williams, 1996). Precise and detailed measurement of efficacy judgments is typically highly related to subsequent school performance (Schunk, 1991). Therefore, based on the previous literature review, the ability to accurately assess efficacy perceptions in educational settings seems to warrant systematic investigation (Coombs & Fuqua, 1999). The belief of Bandura's (1986) social-cognitive theory of perceived self-efficacy specified the origins and structure of efficacy beliefs, which added to this study's connection of student access and self-efficacy as a complementing component to influence student college readiness (see Figure 3). Moreover, the validity and reliability of these selected measures is based on the integrity of the scores produced by the instrument (Coombs & Fuqua, 1999).



**Figure 3: Bandura's Social Cognitive Theory (1989)**

Another study using this self-efficacy assessment tool has been cited in the literature (Bryant & Fuqua, 1997). This study is the reason the Self-A form was used in the current research study and to use a valid and reliable instrument, which was created by Zimmermand and Kitsantas (2007). Other researchers have begun administering

separate subscales from the instrument (Williams, 1996; Zimmerman, Bandura, & Martinez-Pons, 1992). However, there is limited psychometric data available on this important measure of self-efficacy against college readiness, (Coombs & Fuqua, 1999). As a result, this research study includes self-efficacy beliefs and the digital divide technology access measured against college readiness assessments. The reviewed results from this study indicate that perceptions of academic efficacy are more predictive of academic achievement than the widely used traditional measures of self-concept of ability (Bandura, Bárbaranelli, Caprara, & Pastorelli, 1996). A hypothesis can be drawn by construction of the refinement of the assessment tools that increase the explanatory and predictive power of self-efficacy constructs, which may advance the understanding of social-cognitive processes (Coombs & Fuqua, 1999). To interpret into the present study, more alternative assessments will increase diverse approaches and equity to college readiness mastery.

This research study included further analyses of the role of self-regulation in the acquisition of knowledge and cognitive skills, which have been largely confined to enhancement of academic learning by the use of student technology access and self-efficacy metacognitive strategies. Empirical data shows that a number of theorists have addressed the pragmatics of self-directive in terms of selecting appropriate strategies, testing one's comprehension and state of knowledge, correcting one's deficiencies, and recognizing the utility of cognitive strategies (Brown, 1987; Paris & Newman, 1990). Self-directive use of cognitive strategies is a part of the way in which students regulate their own cognitive development and functioning. To refer back to the social cognitive theory, this supports integration of cognitive and metacognitive factors identifying with

motivational self-regulation mechanisms, (Bandura, 1986; Zimmerman, 2000; Zimmerman & Cleary, 2006). To emphasize, this theory expands the concept of self-regulation in two directions. First, it incorporates a larger set of self-regulatory mechanisms governing cognitive functioning. Second, it encompasses social and motivational skills as well as cognitive ones.

The present study utilized Bandura's social-cognitive theory (Bandura 1989; 2000), since he has been the leading proponent of an expanded model of academic self-regulation. The hypothesis of the conceptual framework of social cognitive theory exists when people must develop skills to regulate the motivational, affective, and social determinants of their intellectual functioning as well as the cognitive aspects. This requires bringing self-influence to bear on every aspect of their learning experiences. There is a major difference between possessing self-regulatory knowledge and skills and being able to put them into practice and to stick with them. Self-regulatory skills will not contribute much if students cannot get themselves to apply them consistently in the face of difficulties, stressors, and competing attractions. Firm belief in one's self-regulatory efficacy provides the staying power. Students' belief that they can regulate their own learning raises their efficacy for academic activities (Caprara et al., 2008). Their academic efficacy increases their achievement both directly and by raising their academic aspirations (Zimmerman & Bandura, 1994; Zimmerman, Bandura, & Martinez-Pons, 1992).

## **Digital Divide**

### **History of the Digital Divide**

The Digital Divide is a phenomenon which has been in existence for the past several years. The Digital Divide has been described as a presumed obstacle of uncertain dimensions (Stone, 2003). Furthermore, the Digital Divide exists not only between ethnic lines but within the division between the “haves and “have-nots” (Novak and Hoffman, 1998), which is driven by income and educational levels.

Technology savoir-faire seeps into our current cultural expectations, defines status, and establishes a digital identity (Goode, 2010). To develop further understanding of the presented need for student Internet and computer access, prior knowledge of the digital divide phenomenon is necessary to communicate the need for student access to influence student achievement in the contemporary classroom curriculum and 21st-century skills expectations.

### **Income**

Since the digital divide began to surface in literature during the mid-1990s, the U.S. National Telecommunications and Information Administration popularized the term to describe the societal split between those with and those without access to computers and the Internet (Warschauer, 2003). Likewise, the NCES reported that computer and Internet use by students in 2003 revealed that the digital divide continued to exist, particularly along demographic and socioeconomic lines (NCES, 2006). Moreover, according to the New Commission on Skills and the American Workforce (2006), going to college and earning a degree is now considered necessary to achieve economic success in the 21st century. Therefore, if the digital divide effects continue to go unresolved, an

achievement gap will begin to widen relating to the demand for college degrees in the workforce. First-generation college-bound, low-income, and minority students represent the lowest proportion of students in higher education, (Choy, 2001; Tym, McMillion, Barone, and Webster, 2004; Vargas, 2004).

A study found that computer ownership was directly related to the level of income in a household, but ownership was racially biased (Novak and Hoffman, 1998). The results found that households earning less than \$40,000, whites were twice as likely to have a computer; however, for households earning more than \$40,000, African Americans were more likely to have a computer at home and at work (Novak and Hoffman, 1998).

The National Telecommunications and Information Administration (NTIA) August 2000 survey results found 51% of American households owned computers, compared to 42% in 1998, and 41.5% had access to the Internet at home, compared to 26.2% in 1998. The NTIA 2000 survey found that 85% of households with incomes of \$75,000 and higher have a computer at home, compared to just 19% of households in the \$15,000- and-under income bracket. Similarly, 78% of households at the highest income levels have Internet access, compared to only 13% of low-income households.

#### Race/Ethnicity

In addition, there is a significant racial digital divide, with Blacks and Hispanics continuing to experience the lowest household Internet, at 23.5% and 23.6%, respectively, compared to 46.1% among whites (NTIA, 2000).

Furthermore, accessing the information related to the preparation necessary for college readiness is one of the greatest barriers for college enrollment among the least



represented population (Adelman, 1999; Choy, 2001; College Board Forum, 2005; Conley, 2003; Schmidt, 2003; Somerville and Yi, 2002; Striplin, 1999; Strong American Schools, 2008; Thayer, 2000; Tym, McMillion, Barone, and Webster; Vargas, 2004).

### Gender

Young, 2000 found the computer gender gap to begin at an early age. Other early studies promote that boys have more computer exposure at home and school ((Fetler, 1985; Gilliland, 1990; Siann et al., 1990). Also, boys are more likely to participate in computer camps and after-school clubs (Hess & Miura, 1985). Lastly, another early study found boys dominate computer use in school and elective programming activities (Becker & Sterling, 1987; Siann et al.) (p. 2).

### Technology Policies

Likewise, this research study is based on a specific recommendation for preparing students for college level social and academic expectations. For this reason, after conducting an extensive literature review the research findings of Goode (2004) recommended to conduct other studies to direct the need for teachers and counselors from K–12 schools, higher education administration and faculty, as well as students and community members, to come together and work on creating an academic technology pipeline for students. Schools need to know about the technology demands of higher education, and how to prepare secondary students. Goode (2004) continued on to state, “Without the public education system taking responsibility for the digital demands of students, the least-prepared students will be burdened with an additional obstacle that affects their academic, social, and financial lives as they begin college.”

## **Self-Efficacy**

### *Bandura's Theory of Self-Efficacy*

Bandura's social cognitive theory explains student choices and performance related to academic behavior during high school as a function of reciprocal interactions among individual beliefs (Bandura 1986; 1997). Therefore, illustrating a strong sense of efficacy enhances human accomplishment. To demonstrate further, students will believe in their capabilities to approach difficult tasks as challenges to be mastered instead of as threats to be avoided, (Bandura, 1998). Nevertheless, the students who view the feeling of demise will have a low commitment to finish the goals and remain focused on the difficulties and lack the tenacity to achieve and become successful (Bandura, 1998).

### *Self-Efficacy as a College Readiness Predictor*

In addition, recent high school graduate data gathered from the NCES (2008) verifies that first-year college students are influenced, for better or worse, by their high school experiences. The pupil-teacher relationship changes dramatically, as do expectations for engagement, independent work, motivation, and intellectual development (Conley, 2008).

At many of the nation's colleges and universities, providing access has traditionally been a process by which institutions selected their student body from a pool of candidates through some type of enrollment management model (Kurz & Scannell, 2006). Some have evolved to include orientation programs that serve to predict whether the student will be successful at the institution. Predictive analytics allow institutions to

better understand the predictors of success for potential students (Lange & Smith, 2010). Moreover, gathered data could be used proactively to identify students who are likely to struggle and match them with the supports they need to be successful. Alternatively, predictive analysis could be used punitively by dropping students who are identified to be unsuccessful (Mullin, 2012).

## **College Readiness**

### **College Readiness and 21<sup>st</sup> Century Technology Readiness**

Continuing to review vast research focusing on college readiness, Nagaoka, Roderick and Coca (2009) identified academic rigor, high school grade point average, academic support skills needed for success in college level courses, and general college knowledge as indicators of a student's college readiness for college. Further literature review established a disproportion of information fluency retained by Internet technology in the high school academic arena is deficient. The 21st-century high school student's Internet technology needs exist based on school district policies and educational solutions advised from federal and state departments of education to gain a comprehensive outreach to the targeted college bound high school population. Currently, public high school students are required to take at least one course using the Florida Virtual School, an online platform of curriculum. Internet technology access enables students to complete blended online college application processes, to acquire financial aid or scholarships, and use search engine information to gain further research acumen to make better decisions. Moreover, collaboration of secondary students using the general social

network results in shared information among peers and translates directly to the student population with little or no access to Internet technology (Goode, 2010).

#### Issues to Fund Resources

The recent congressional elimination of Title IV eligibility necessary to benefit students serves as one example of the emphasis on serving those who are most likely to succeed (Mullin, 2012). Title IV eligibility is Federal student aid programs reauthorized under Title IV of the Higher Education Amendments of 1992. Sources of Title IV aid funding include the following: Federal Family Education Loan Program (Federal Stafford Student Loan (subsidized and un-subsidized) Federal Perkins Student Loan, Federal Parent Loan for Undergraduate Students and Federal Supplemental Loan for Students) Federal Campus-Based Grants (Federal Supplemental Education Opportunity Grant), and the Federal Pell Grant Program.

Nevertheless, the bold federal policy contradicts the many institutions that have been dedicated to serving an underrepresented population. In fact, it also disproportionately impacts populations already underrepresented in terms of student success: Based on a statistic, which estimated that 19% of the ability to benefit students were African-American and 31% were Hispanic, whereas these populations each make up 14% of higher education's undergraduate student body (NCES, 2011). Connecting to the research study, the impact of this change on students is palpable: Aspiring college students whose K-12 experience was either inadequate or incomplete will need to take an alternative path to federal financial supports needed to afford higher education (Mullin, 2012).

For example, finding policies to be implemented like the Access to Success initiative, involving 24 state higher education systems, explicitly measures access by determining whether a higher education system's entering class reflects the socioeconomic and racial or ethnic profile of each state's high school graduates (Engle & Lynch, 2009). Another action is to ensure that performance measures include both student counts as well as data-driven tables for students entering college and reaching certain levels of success (Kiley, 2011). Finally, "input adjusted" outcome metrics is an emerging policy focus that may serve to encourage colleges to continue to serve these students without fear of being viewed as "ineffective" (Mullin, 2012). Therefore, policy engages the public to ensure that the United States has the most educated workforce in the world and to remember that all citizens are included in the denominator of the education equation of access equals success. Lastly, to safeguard students and ensure that the focus on completion does not result in a more restricted student body, the institutions that provide the broadest swath of opportunity must be incentivized to continue to provide access to college (Mullin, 2012).

### **Other Related Proponent Studies**

Numerous studies have been conducted to determine the impact of home computers with Internet access on learning. Atwell and Battle (1999) conducted a study of home computers and their impact on student results; the results of which suggested that use of home computers positively impact academic achievement of eighth graders surveyed in the National Educational Longitudinal Studies of 1988, citing higher test scores in mathematics and reading. A study in 2007 documented that the impact of

student achievement was greater for higher socioeconomic students, less for girls and boys, and even much less for minorities. The findings indicated that children from poorer homes incurred a minimal impact of learning gains, and was due to the other forms of inequalities that modify the frequency of home computer use and the ways computers used which consequently affects the educational benefits derived from home computing (Robinson, 2007).

Another study documented graduation rates for teens that have home computers increased by two percentage points over those students without access (Beltran, DAS, and Fairlie, 2006). Another study examined the effects of laptop computers on student achievement; those findings indicated the students with laptop computers earned higher scores than the control group who did not use a computer (Siegle and Foster, 2000). In addition, a study of 89 adolescents from low-income communities documented that frequent use of a home computer positively impacted academic achievement, class participation, family relationships, and self-confidence (Tsikalas and Gross, 2002). Yet, self-autonomy, self-relatedness, and self-competence are three basic psychological needs of all humans explaining how young people use computers to fulfill these basic psychological needs (Tsikalas and Gross, 2002).

Similarly, another study provided data of Black and Hispanic students who may perform more poorly than White students in online courses (Newell, 2007). This study stated that if a trend could be explained by the fact that Black and Hispanic students tend to perform more poorly in college overall, given that they are systematically disadvantaged in terms of the quality of their primary and secondary schooling (Feldman, 1993; Allen, 1997; DuBrock, 2000; Wiggam, 2004). No studies have explored the

moderating role of ethnicity in terms of student adaptability to online courses, and no studies have examined whether the ethnic minority performance gap is exacerbated by online coursework (Xu and Jaggars, 2013). However, some researchers (e.g., Gladieux & Swail, 1999) have raised concerns that online learning could widen the postsecondary access gap between students of color and White students because of inequities in terms of at-home computer and Internet equipment. For example, in 2009, only 52% of African Americans and 47% of Hispanics had high-speed Internet access at home (Rainie, 2010). Implications from this study revealed disadvantages in terms of at-home technological infrastructure could affect these students' ability to perform well in online courses available in high school and post-secondary institutions.

### **Access and Demographic Differences**

The focal point of the digital divide dilemma can be explained using the social-cultural lens. One of the goals of this research study was to examine the relationship factors of socioeconomic status as it relates to income with computer and Internet access. The digital divide by definition refers to the gap between those who can benefit from digital technology and those who cannot. However, it took digital divide researchers over a decade to figure out that the real issue is not entirely about access to digital technology, but about the benefits derived from access. This information is relative to clearly understanding the goals of the present research study.

Empirical studies have indicated that economic inequalities in computer ownership among white households were much smaller than among African American households across the United States (Chakraborty and Bosman, 2005). Not to ignore other empowering factors, another study has cautioned that providing technology access

is not enough to eliminate the digital divide (Jackson et al., 2003). Contrary evidence has been presented that even among study participants with Internet access, it was used less by African Americans (Robinson, 2007), and a significant digital divide exists between minority and White students (Trotter, 2006). The research findings documented ethnicity differences: 91% of Asian-Americans and 67% of Whites were likely to use the Internet. Likewise, 47% of African-American students and 44% of Latino students were likely to use the Internet (Trotter, 2006). Moreover, students living in low socioeconomic families tend to live in low socioeconomic neighborhoods and were likely to be without access to home computers (Becker, 2000).

### **National Technology Policies**

Education reform requires a revised definition of literacy to include technology standards (Pittman, 2002). The International Society for Education (ISTE) published the *National Educational Technology Standards for Students* (NETS\*S, 2006) and *Standards for Teachers* (NETS\*S, 2006), which provide a framework of six technology domains, including (a) Domain I: basic operations and concepts; (b) Domain II: social, ethical, and human issues; (c) Domain III: technology productivity tools; (d) Domain IV: technology research tools; Domain V: technology communication tools; and Domain VI: technology problem-solving and decision making tools. Yet, in the state of Florida computer literacy standards do not exist.

### **Summary**

Literature reviews at the postsecondary level provide evidence-based research that colleges and universities are likely to increase the proportion of students recruited from low-income households. Demographic trends in the current higher education pipeline,



defined as all births that occurred 18 years prior (Mortenson, 2003), show that colleges and universities must be sensitive to the persistence of digital access inequalities among future cohorts of first-year students.

Evolving digital components of the P-16 curriculum has transformed the student academic preparation needed to become college ready by state and standards. Innovative technology merging into classroom student outcomes brings many challenges to educators and policy makers to define equitable access of learning goals for all students. Empirical evidence of technology access has been linked to improve student learning outcomes, and promotes higher order thinking skills. The responsibility of policy makers is to reform digital access equity and contribute further data advocating for technology access to increase student college readiness.

### **Definition of Terms**

**Achieving the Dream: The Community Colleges Count**—A national initiative to help community college students succeed, particularly representing students of color and low-socioeconomic status. The initiative works on multiple fronts, including efforts on campuses and in research, public engagement, and public policy, and emphasizes the use of data to drive change. Achieving the Dream was launched in 2004 with funding provided by Lumina Foundation for Education. Seven national partner organizations work with Lumina to guide the initiative and provide technical and other support to the colleges and states (Developmental Education Initiative: State Policy Framework and Strategy).

**Digital divide**—The gap or imbalance that exists between those who have access to information and communications technology and also to the unequal access of

resources. The digital divide can exist between those living in rural areas and those living in urban areas, between the educated and uneducated, between economic classes, and on a global scale between more and less industrially developed nations.

Digital equity—Defined as equal access and opportunity to digital tools, resources, and services to increase digital knowledge, awareness, and skills. When considering the role of technology in development of the twenty-first century learner, digital equity is more than a comparable delivery of goods and services, but fair distribution based on student needs (Davis, 2007).

Digital native—Prensky (2001a) defines the younger generation as digital natives as they are all “native speakers” of the digital language of computers, video games and the Internet.

Technology identity—A complex blend of beliefs about knowledge, attitudes toward importance of technology, opportunities, and motivation (Goode, 2004).

College readiness skills—Data collected from ACT, College Board, EXPLORE, PLAN, and the ACT measure students' progressive development of knowledge and skills in the same academic areas from grades 8 through 12. The scores from these three programs can help educators monitor students' academic growth over time.

Self-efficacy—Students' belief in their efficacy to regulate their own learning and to master academic activities determine their aspirations, level of motivation, and academic accomplishments, Bandura (1993).

Florida Virtual School—An educational organization that offers K-12 coursework through Internet or web-based methods.

## **CHAPTER THREE: METHODOLOGY**

### **Research Questions**

This study explored if student technology access, demographic differences of gender, ethnicity, and socioeconomic status, and self-efficacy status influence college readiness. The results of this research study will allow school leadership to focus on the variables displaying the closest correlation to influence college readiness. It collected data from a student demographic survey and a self-efficacy form to examine the following research questions:

Q1. Is there a difference in college-ready mastery based on student computer and Internet access?

Q2: Is there a difference among student demographic factors of gender, ethnicity and socioeconomic status and college readiness?

Q3: Is there a relationship of student self-efficacy and student college readiness?

### **Methodology**

The quantitative method was appropriate for the study because a quantitative research design is concerned with examining the relationship of known variables (Creswell, 2005; Ritchie and Lewis, 2003). The method of research established for this design represented a quantitative study using only secondary students in their senior year of high school; therefore, it was a convenient sample in a quasi-experimental setting. This study used an online survey to examine students' technology access at home and school and students' self-efficacy to understand the impact of these independent variables on college readiness as defined by the Florida Department of Education. The survey

included a voluntary consent form, an abridged 19 question SELF-A Form (Zimmerman and Kitsantas, 2007) including demographic questions. Also, student college readiness scores were collected from the district site provided by the IRB approval of Palm Beach School District Education Data Warehouse (EDW).

The selected research site for implementation is a consistently highly ranked comprehensive south Florida public high school rated as an “A” school by the Florida Department of Education, and included in the top 25 of *The Washington Post’s* annual high school ranking scale. Quantitative data was collected from questionnaires including demographics, home and school computer and Internet access, and a student self-efficacy survey, all of which were measured against the individual student college readiness scores on the ACT, SAT, PERT.

In addition to the decade of research that states the digital divide phenomena exists, this research study identified student access to computer and Internet technology using the student demographic survey questions to analyze student technology access and the self-efficacy abridged 19-question survey (Zimmerman and Kitsantas, 2007) results to examine high school seniors beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives (Bandura, 2006) impacting college readiness student outcomes.

The instruments used to collect data in this research study were a student demographic questionnaire, the SELF, and Florida College Readiness Cut Scores. The period of data collection was March 2013 through June 2013.

### **Sample Population**

As previously noted, this study used a convenient sample of high school seniors in a quasi-experimental setting. Convenient sampling is a nonprobability sampling technique where subjects are selected because of their convenient accessibility and proximity to the researcher. An advantage of using convenient sampling is the ease to carry out with minimum protocol to govern how the sample should be collected in a short time frame. Another advantage is the relative low cost and time required to carry out a convenient sample to collect results for data analysis. In addition, the convenient sample may help gather useful data and information that may not have been possible using other sampling techniques, which require more formal access to lists of populations. Therefore these advantages enable achieving the desired sample size relatively quickly and inexpensively.

In this research study, the convenient sample population included senior class members at the selected comprehensive high school. The school's total student population was about 3,000; the senior class had approximately 785 students available to participate in this research study. They were able to access the survey via computers in the school library's computer lab. English teachers also volunteered to bring students to the computer lab on a specific day, March 7, 2013, so they could voluntarily participate in the study and access the reserved computers. The link to the survey was also released to those students to access at home who verified submitting their voluntary signed consent form to the faculty representative of the study.

The senior class at the selected high school was given the IRB Lynn University and Palm Beach School District IRB-approved student voluntary consent form in their

English and science classes to have signed by their parent or guardian. Next, faculty representatives collected the consent forms of the participating high school seniors. After receiving the IRB voluntary consent forms the faculty representatives presented the online survey link.

In contrast, disadvantages of the convenient sample may suffer from biases from a number of preferences. Moreover, a convenient sample can lead to under-representation or over-representation of particular groups within the sample. Since the sample is not chosen at random, the inherent bias in convenient sampling means that the sample is unlikely to be representative of the population being studied. This undermines the study's ability to make generalizations from the selected sample of the population being studied.

The design of a quasi-experiment relates to a particular type of study in which there is little or no control over the allocation of the treatments or other factors being studied. This applies directly to this research study, since the roles of student differences were examined and explored in a natural setting.

### **Procedures**

All participants involved in the study were members of the senior class of 2013 invited to voluntarily submit a signed voluntary consent form by parent or guardian and complete an online survey. The survey instrument was administered online to student participants after consent form verification by the principal investigator or representative. The link was presented by Survey monkey.com and was open for survey participation during a portion of the third quarter of the 2013 school year, from March 7 to March 31. The students were told by the principal investigator or representative to take their time

completing the survey and if they have any questions to ask the representative or principal investigator. The students who signed the voluntary consent and participate in the study also used their obtained college readiness score from school records based on IRB approval from the school district and university partnership.

### **Instrumentation**

The purpose of this study was to examine whether student technology access at school and home and self-efficacy status would influence college readiness at the secondary level. Also examined were differences in socioeconomic status, gender, and ethnicity contributing to college readiness.

This study used a convenient sample of high school seniors in a quasi-experimental setting. Participants were asked to complete one instrument that could be accessed on the Internet. The instrument contained 31 questions in two sections: (a) a demographic student questionnaire and (b) a self-efficacy survey "Self-A Form survey" developed by Zimmerman (2007). Zimmerman granted permission to use the Self-A Form Survey (see Appendix D) for this study to add reliability and validity for this instrument, which has already been established in previous studies.

The measured domains of each participant's self-efficacy beliefs included reading, note taking, test taking, writing, and studying. The students were asked to respond to the Self-A Form survey first, due to the rigor and academic reflection needed to answer sufficiently; the demographic questions were the last 10 yes/no/multiple choice/open-ended questions asked.

### **Construct Validity**

As in all research, consideration must be given to construct validity, internal validity, external validity, and reliability (Yin, 1989). This research study established construct validity by using a multiple variable regression study in a quasi-experimental setting based on one dependent variable and multiple independent variables. The specification of the unit of analysis also provided internal validity as the theories were developed followed by data collection and concluding with analysis to examine the results.

This study used a convenient sample of high school seniors in a quasi-experimental setting. It used quantitative methods including a demographic student questionnaire and the SELF Abridged Survey instrument from Zimmerman and Kitsantas (2005), granted with permission to use for this study establishing reliability and validity. This instrument was used previously in a parochial school of all females and has a Cronbach value of  $\alpha = .97$ .

This study analyzed the relationship of the digital divide phenomena, student technology access at home and school, demographic differences of gender, ethnicity, and socioeconomic status, and self-efficacy beliefs to reveal the influence of these variables pertaining to college readiness assessments scores in the final year of high school students while simultaneously preparing for transition into college. The literature review of studies including Goode, 2004; Bandura 2006; and Zimmerman and Kitsantas, 2007 led to the current study's hypothesis that these independent variables would establish a strong student relationship, measured to the only dependent variable of college readiness assessments.



It was believed that the results of this study could affect policy and transparent cost of current public education mandates. It was further believed that the results of this study would quantify data to reevaluate the cost and focus on the social and cognitive lens of student college readiness.

The process to identify the academic and social influence of this study was to analyze quantitative data from the student questionnaire, the SELF survey instrument, and the Educational Data Warehouse college ready cut scores defined by the Florida Department of Education.

A critical factor related to the outcome of this research study was the majority of student participation. Due to the issue to generalize it is typically a system of action rather than an individual or group of individuals. In addition, the represented study is selective, focusing on two issues that are fundamental to understand the influence of the digital divide phenomena and sense of efficacy to be measured through the Florida college readiness achieved scores.

This research study examined student self-efficacy reflective valuation impacting college readiness information and to quantify the real-life context in which the digital divide issue of technology access can be further documented. The recognition of empirical evidence of the digital divide phenomena provided high school seniors' perspectives of the challenge to using Internet technology for college readiness support at the secondary level. However, there is very little literature relating to the influence of the lack of technology access needed to prepare secondary students for college level expectations socially and academically.

This exploratory study resulted in quantitative findings regarding the impact of the digital divide (Tashakkori and Teddlies, 1998). It was guided by research questions regarding the impact of the digital divide on technology access, demographic factors, and self-efficacy status to complete a picture of high school seniors' social-cognitive lens needed to prepare to attend an institution of higher education (Bandura, 1993). The next stage was to collect data from the students participating in the research study by having them complete a completing an online student questionnaire, the SELF, and parental consent forms.

### **Internal Validity**

Internal validity can be defined as the extent to which the results obtained in a research study is a function of the variables that were systematically manipulated, measured, or observed in the study. The research represented in this research study focused on the digital divide phenomena using the social and cognitive lens (Bandura, 2006). Also used in this research study was a reliable and valid survey instrument constructed by Zimmerman and Kitsantas (2005) from a previous study to enhance authentic internal validity.

Also, another case study from Tennessee, aligning with this study's research design, presented the primary researcher's interest to understand the impact of the digital divide by using a cohorts' perspective, which collectively enables further generalization at other sample populations in the secondary public education arenas. To continue with further investigation during the case study, the researcher had the cohorts fill out a survey about computer technology accessibility, ability, skills, and knowledge. Then, the

researcher gathered and evaluated the survey data compiled by the cohort, parents and stakeholders.

The findings illustrated the study's focus on revealing information identifying differences that can be correlated to the digital divide phenomena. However, due to the many ways in which the cohort differed, it cannot be confidently concluded that any survey response of differences observed among the cohort is due to the digital divide phenomena. The cohort may have been different in terms of their prior knowledge or enthusiasm, the cohort may not be equivalent with respect to interest or preparation, or there may have been interruptions, such as fire drills or assemblies to complete the survey. The list of possible conditions that could have produced survey response differences is almost endless. Each of those possible conditions constitutes a potential threat to the internal validity are explained in the following sections.

### **Potential Threats to Internal Validity**

The threats to validity with this design included a convenient sample and a small number of students at one implementation site, which might have prohibited comparisons and recording differences or contrasts to generalize this study. Also, there is a tendency to have the error of misplaced precision where the researcher engages in collection of specific details and testing and misinterprets this as obtaining solid results and data. However, you cannot misinterpret that a detailed data collection procedure equals a concrete design. Lastly, history, maturation, selection, mortality and interaction of selection and the experimental variable are all threats to the internal validity of this design.

History refers to the occurrence of events that could alter the outcome or the results of the study. These events could occur before the study, in which case we refer to previous history, or during the study, in which case we refer to concurrent history. For example, in the presented research study some of the students or parents could have recently watched a television documentary entitled "The Digital Divide." This would be an example of previous history influencing the results of a study.

Maturation pertains to any changes that occur in the subjects during the course of the study that are not part of the study and that might affect the results of the study. Such changes could be biological, that is, growth processes during the study that may affect the results, or they may be psychological, that is, learning or development that occurs during the study may affect the results. To illustrate, examining the interest of each student's specific technology use during school hours versus out-of school hours from October to June as a function of the school programs would have to take into consideration that normal adolescent growth would account for some of the change in those variables during that period. Biological maturation is possible source of invalidity in this case.

Instrumentation is concerned with the effects on the outcome of a study of the inconsistent use of a measurement instrument. The instruments used in this study to measure college readiness were the college readiness cut scores students achieved individually, a student questionnaire and a valid and reliable self-efficacy instrument, the SELF. The instruments were combined into two sections on an online survey, so if the students became fatigued during data collection because of the length of the instrument, that may generate results due to the deterioration of the testing instrument rather than to the variables being isolated.

Mortality refers to the loss of subjects from the study due to their initial no availability or subsequent withdrawal from the study. Mortality can occur when potential participants agree to take part in a study in a nonrandom way. In other words, participants are different from those who chose not to participate. For example, if during this study the survey instruments are incomplete, and the outcome of the study may be invalid due to mortality and not being able to complete the study.

Selection pertains to the possibility that groups in a study may possess different characteristics and that those differences may affect the results. For example, one group might differ from another in age, ability, gender, or racial/ethnic composition, or any of an almost unlimited number of ways. To the extent that such differences in group characteristics could affect the outcome of the study, they constitute a potential threat to internal validity due to selection, which can occur in this study as a result of using a convenient sample.

### **Procedures for Maximizing Internal Validity**

Steps were taken to minimize the potential threats to internal validity. Fraenkel and Wallen (1993) suggested four general ways in which these threats can be minimized:

1. Standardization of the conditions under which the research study is carried out will help minimize threats to internal validity from history and instrumentation.
2. Obtaining as much information as possible about the participants in the research study aids in minimizing threats to internal validity from mortality and selection.
3. Obtaining as much information as possible about the procedural details of the research study, for example, where and when the study occurs minimizes threats to internal validity from history and instrumentation.

4. Choosing an appropriate research design can help control most other threats to internal validity.

### **External Validity**

Rarely is a researcher interested in drawing conclusions only about the participants in a study. External validity, as described earlier, refers to the extent to which the results of a research study are able to be generalized confidently to a group larger than the group that participated in the study (Bracht & Glass, 1968.)

Threats to the external validity of this research study may be related to the population, that is, the extent to which a sample is representative or not representative of the population from which it was selected, or to the ecology, that is, the extent to which characteristics of the setting or context of the research study are representative, or not representative of the setting.

This research study used the social-cognitive lens adapted from Bandura (1993), which contributed significantly to enhancing the theoretical framework and the reliability and validity of the selected instrument for self-efficacy. This study is relevant based on statewide guidelines that have been implemented to address college readiness determined by the Florida State Statue addressing college readiness, 1008.30(3) F.S statute, which requires schools to evaluate the college readiness of all students before the beginning of grade 12 regardless of their postsecondary plans.

### **Validity and Reliability**

To address reliability and validity of the survey instrument the SELF, developed by Zimmerman and Kitsantas (2005), was used to assess self-efficacy. This instrument

was a result of Bandura's 2006 recommendation to increase the rigor of the items, based on Bandura's 1989 self-efficacy for SRL scale (Zimmerman and Kitsantas, 2007). The theory to develop an increased difficulty item format required student participants to extend beyond self-efficacy beliefs about their procedural knowledge and skill to include their conditional self-efficacy (Zimmerman and Kitsantas, 2007).

Results from a previous study by Zimmerman and Kitsantas used 19 items to focus on studying, test preparation, and note taking. The reliability coefficient for students' scores on the Self-A (Cronbach's  $\alpha = .97$ ), and a confirmatory factor analysis was conducted. In addition, to an exploratory factor analysis of student's scores revealed one factor, which accounted for 67% variance (eigenvalue = 12.76).

The interpretation of the scales illustrated that higher scores on this scale reflect more positive self-efficacy for learning beliefs, and the 10-point decibel based self-efficacy scale are more sensitive and reliable (Pajares, Hartley, and Valiante, 2001). Thus, psychometric analyses revealed that students' scores on the SELF were highly reliable and involved a single underlying self-regulatory factor in prior research ((Zimmerman and Kitsantas, 2007).

### **Quantitative Data Collection**

The survey used for this study contained 31 questions divided in two parts. The first part included reading the consent form and checking a yes/no box of consent form verification. The next 19 questions were the SELF abridged version replicated from Zimmerman and Kitsantas (2005). The final 11 questions related to survey management, student technology access, and demographic differences identifying gender, ethnicity,

and SES. To address the study's research questions, descriptive and inferential statistics were collected using the Statistical Package for Social Science (SPSS).

The survey, which was replicated from Zimmerman and Kitsantas (2005),( see Appendix D) , required the use of higher-order thinking skills to answer the questions, which used a 10-point Likert scale ranging from definitely cannot do it (0), probably cannot do it (30), maybe (50) probably can do it (70), and definitely can do it (100). The last 10 survey questions were the demographic portion of the survey. The recommendation for added units of analysis was based on Bandura's theory to add more points of detail for the student to answer with further accuracy for data collection. To score the instrument the higher scores achieved on the survey reflected higher self-efficacy belief. Psychometric analyses revealed that students' scores on the SELF were highly reliable and involved a single underlying self-regulatory factor in prior research, (Zimmerman and Kitsantas, 2005).

### **Student Technology Access**

This section of the survey included six questions querying access of computers at home with Internet connection, other places to access technology, and the number of hours per week doing homework. It was based on review of Goode's previous work.

### **SELF-Efficacy**

This section of the survey was developed by Zimmerman and Kitsantas (2005) assess self-efficacy (see Appendix D). The constructed items of the SELF form are to capture students' certainty about coping with challenging academic problems or contexts, such as having trouble concentrating on a reading assignment or having missed class



(Zimmerman, 2007). To illustrate, an example of a question on the survey instrument is “When problems with friends and peers conflict with schoolwork, can you keep up with your assignments?” The item format was designed to be a demanding test for self-efficacy beliefs because it involves adapting to difficult learning conditions as recommended by (Bandura, 2006). Therefore, these items extend beyond students’ self-beliefs about using learning strategies to include their conditional self-efficacy beliefs, (Zimmerman, 2007). The means, standard deviations, and factor loadings for this instrument can be found in Appendix B.

### **Research Design**

This study implemented a quasi-experimental design and identified the variables. The quasi-independent variable was the x-variable, the variable that was manipulated to affect a dependent variable. The “X” is generally the grouping variables with different levels as student technology access, demographic differences, and self-efficacy status. The predicted outcome is the dependent variable, which is the y-variable. This study’s dependent variable is college readiness assessment scores. Once the variables have been identified and defined, a procedure was then implemented and group differences were examined.

Some advantages of this selected research design are that quasi experimental designs minimize threats to external validity as natural environments do not suffer the same problems of artificiality as compared to a well-controlled laboratory setting. Since quasi experiments are natural experiments, findings in one may be applied to other subjects and settings, allowing for some generalizations to be made about population

To address Bandura's (1997) social cognitive theory and the role of self-efficacy (Zimmerman, 2007) predisposed by student access is the framework of this study. This study used a multiple ways of ANOVA design. This design was implemented because an experimental design was not feasible due to the fact that the student population could not be controlled.

### **Data Collection**

The survey was completely electronic and was accessible by students who met the criteria of a member of the 2013 senior class and upon receipt of the voluntary consent form. The grade level status was designated by school-administered grade level transcripts identified by the school district. In addition, the student participant had to sign a voluntary consent form to gain access to the survey. The guidance regarding the survey that was provided to all students is presented in (Appendix A).

The student participant was able to complete this online questionnaire survey in private in approximately 15 minutes. The web-based survey instrument was presented by SurveyMonkey.com. Survey Monkey uses Secure Socket Layer encryption to ensure participant confidentiality and survey security. Survey Monkey does not record personal identification information. Participants were advised of the browser type and version necessary for proper encryption on the consent form. All participants remained confidential to the primary researcher. The study's digital divide access questionnaire contained 6 YES/NO; 5 dropdown menu; and 19 Likert-scale questions.

Student participant responses to the questionnaire were coded and entered into SPSS and used in analysis. Based on research guides, the results of a research study are only useful to the extent that they can be accurately and confidently interpreted. The issue of accuracy and confident interpretation of results is at the center of any discussion of validity. Validity, which is derived from the Latin word *validus*, meaning “strong,” refers to the degree to which correct inferences can be made from the results of a research study. The idea of validity in a research study involves two concepts at the same time. A researcher wants to have confidence that the outcomes observed in a research study are a function of the conditions observed, measured, and manipulated in the study and not due to some other factors that were not addressed in the study. Such confidence reflects the internal validity of a study. The results of this research study to make a claim, not just about the participants in the study, but also about a larger population of which the participants are the sample. The ability to make such claims, or generalization, depends on the external validity of the study which is valid as a result of the SELF form efficacy inventory and the total participant percentage reflected in results.

### **Data Analysis**

To address the first research question, *is there a difference in college-ready mastery based on student computer and Internet access?*, an independent samples t-test was used to analyze the differences of computer access and Internet access. Then, completed a Levene test to identify a significance of the two independent variables to the one dependent variable of college readiness mastery.

To address the second research question, *is there a difference among student demographic factors of gender, ethnicity and socioeconomic status and college readiness*

a three-way ANOVA design was used since college readiness was the only dependent variable. The data analysis included a t-test for gender, ANOVA for the five categories of ethnicity, and a binary for socioeconomic status and household income.

To address the third research questions, *is there a relationship of student self-efficacy and student college readiness*, a multiple regressions design was used since college readiness was the only dependent variable.

### **Limitations and Delimitations**

This research project studied a convenient sample of high school students in their senior year at a comprehensive public high school that perpetuates a model of high performance based on rankings from *The Washington Post* and grade ranking from the Florida State Department of Education. The comprehensive high school has approximately 3,000 students and 35% free or reduced lunch student population. The data collected is representative of one very large suburban public comprehensive high school in an affluent area of involved parents and community leaders imposing high expectations for college readiness and enrollment in advanced placement courses. The characteristics representative of this high school illustrate a positive school culture extending from administrators, teachers, parents, to students collaborating to facilitate positive student outcomes, which may be atypical and therefore this study could not be generalized. Also, many colleges and universities in the state of Florida have varying entry level courses, remedial courses, and requirements for entry into the same and different courses (NAGB, 2009; Shaw and Patterson, 2010).

The quantitative research study used a quasi-experimental setting, and implemented an online survey to senior class members. The results were analyzed with SPSS. The Levene's Test for Equality of Variances was selected. This is a test that determines if the two conditions have about the same or different amounts of variability between scores. Next, the T-test tells if the Means for the two groups were statistically different (significantly different) or if they were relatively the same. To conclude, there is no statistically significant difference between your two conditions if the Sig (2-Tailed) value is greater than .05. In contrast, if the Sig (2-Tailed) value is less than or equal to .05, one can conclude that there is a statistically significant difference between your two conditions.

## **CHAPTER 4: RESULTS**

This chapter presents the results of the data analysis. The research study's data was collected and then processed in response to the problems posed in the first chapter of this dissertation. Three research questions directed the data collection and the descriptive data analysis. The goal of the research questions were to develop a knowledge base about the roles of technology access, demographic differences of gender, race/ethnicity, socioeconomic status, and self-efficacy measured status on college readiness. These objectives were met; the findings presented in this chapter demonstrate the potential for merging theory and practice.

### **DESCRIPTIVE DATA**

An online survey was presented to a senior class of approximately 785 students. The first step to begin the study included notifying English and science faculty members who taught this class to provide support to announce the survey and provide a time to go

to the campus library to complete the student survey. The next step required faculty to disseminate hard copies of the voluntary consent forms approved by the two IRB approval process, and to be signed by parent or guardian for any senior class students under 18 years of age participating in the study.

The next steps were to schedule a convenient day in the media center for senior class student participants. The survey was implemented through their English classes and promoted by their science classes to access and complete the online student survey in the school media center. The total amount of student participants to access and complete the online survey was 355; however, due to incomplete student surveys the number of student participants included for this research study was a total of 322 senior class respondents.

Next, the survey responses were analyzed using SPSS software. The SPSS process produced descriptive statistics to enhance the interpretation of student access to technology, demographic differences of gender, ethnicity, socioeconomic status, household income, and self-efficacy influencing college readiness.

The majority of participants were between the ages of 18 and 19 years, 44% were male and 56% female participants in a ratio which defers by 12%, which implies that a slightly higher number of females participated in the survey than males, therefore frequencies were distributed slightly uneven (see table 4a).

Table 4a: Gender Descriptive Statistics

<b>Readiness Test * gender</b>				
Readiness Test				
gender	Mean	N		Std. Deviation
Female	3.97	172		1.940
Male	3.87	134		2.136
Total	3.92	306		2.025

Out of the total survey participants, 100% were full time students enrolled at the selected comprehensive public high school. Income was almost proportionately distributed throughout the population. Based on the collected data 21% of the participants' household income fell under \$24,000 per year, 20% of the participants it was between \$25,000- \$49,000, 13% between 50,000-75,000, 13% among 75,000-99,000, and 33% household income over 100,000 (see table 4b).

Table 4b: Household Income Descriptive Statistic

<b>Readiness Test * household income</b>				
Readiness Test				
household income	Mean	N		Std. Deviation
under 24K	3.73	66		2.116
25K - 49K	3.77	61		2.036
50K - 75K	4.32	41		2.263
75K - 99K	3.90	40		1.837
over 100K	4.00	102		1.909
Total	3.93	310		2.016

In addition, the participants' response rate for free and reduced lunch included 40% of participants received free and reduced lunch and 60% of participants not receiving free and reduced lunch (see table 4c). This reflects the socioeconomic status and living standards of the participants responding in this survey.

Table 4c: Free/reduced Lunch Descriptive Statistics

<b>Readiness Test * free/reduced lunch</b>				
Readiness Test				
free/reduced lunch	Mean	N		Std. Deviation
yes	3.66	94		2.030
no	4.34	140		2.062
Total	4.06	234		2.072

Furthermore, the response rate of the student participants' race/ethnicity included in this research study included 7% Asian, 10% Black, 29% Hispanic, and 54% White student population (see table 4d). A final descriptive statistic identifies the student experiences of the selected college ready assessments defined as the ACT, SAT, and PERT for this research study taken to earn college readiness mastery from the Florida Department of Education (EDW).



Table 4d: Race/Ethnicity Descriptive Statistics

<b>Readiness Test * race/ethnicity</b>				
Readiness Test				
race/ethnicity	Mean	N	Std. Deviation	
Asian	3.55	20	1.761	
Black	3.72	32	2.303	
Hispanic	3.87	89	2.024	
White	4.02	166	2.000	
Total	3.92	307	2.021	

### Results of Research Questions

This study determined if student technology access, demographic differences of gender, ethnicity, and socioeconomic status, and self-efficacy status influence college readiness. The results of this research study will allow school leadership to focus on the variables displaying significance to influence college readiness preparation. This study collected evidence from a student demographic survey and a self-efficacy form to examine three stated research questions:

Q1. Is there a difference in college-ready mastery based on student computer and Internet access?

Q2: Is there a difference among student demographic factors of gender, ethnicity and socioeconomic status and college readiness?

Q3: Is there a relationship of student self-efficacy and student college readiness?

### Results Question One

In response to the first research question regarding a difference of college-ready mastery based on student computer and Internet access, the results showed that out of the

total participants 96% said that they had a computer and Internet access at home. Other descriptive statistics demonstrate a deeper understanding of student technology access to explain a richer context to their background of access. An open-ended question asked these participants if they had computer and Internet access other than at home; 51% of participants stated that they had computer and Internet access in more than one place and almost 67% said they have Internet access at school. Twenty-six percent of the respondents access computers with Internet at work or public places, and 19% of the participants access computer with Internet at their friends' or other family members' house. Lastly, another 18% of participants access Internet with their smart phones. This reflects a higher level of accessibility to computers and Internet by research study participants.

In this study the college ready mastery is a nominal variable that limits the quantity of tests. Therefore, Question 1 results were conducted by running an Independent sample t-test to show a difference for computer and Internet access to college readiness mastery. In this sample, the mean score for computer access yes=188 and no computer access =122 (see table 5). The defined groups were 1=yes and 2=no, and the test variables were computer access and Internet access. Next, the results of the Levene's test indicated that equal variances could be assumed and an alpha level of .05 was chosen for this test. In this sample, the mean score for computer access was 1.02 (SD = .126), N= 188, whereas the mean score for no computer access was 1.07 (SD = 1.07) N= 122.

As a result, the difference was statistically significant and Research question was supported ( $t(-2.598) = 308$  df,  $p = .01$ ) (see table 6).

The Sig. (2-Tailed) value for computer access is 0.01. This value is less than .05.

Because of this, we can conclude that there is a statistically significant difference between computer access and no computer access.

As a result, the F-score and significant value and assumed equal variances do not exist. There was a significant difference in the scores for computer access ( $M=1.02$ ) and no computer access ( $M= 1.07$ ) conditions;  $t (-2.598) = 308$  df,  $p = .01$ . Therefore, I used the conservative data, and found computer access with a significance of .01 (see table 7).

This result suggests that computer access has a role on college readiness mastery. Specifically, the results suggest that when students have computer access, they have more technology resources bridging the digital divide and have technology familiarity.

**Table 5 Computer/Internet Access Group Statistics**

		N	Mean	Std. deviation
Computer access	Yes	188	1.02	.126
	No	122	1.07	.262
Internet access	Yes	188	1.03	.176
	No	122	1.06	.234

**Table 6 Independent Samples Test**

		Levene's test for equality of variances		t-test for equality of means	
		F	Sig.	t	df
Computer access	Equal variances assumed	28.607	.000*	-2.598	308
	Equal variances not assumed			-2.270	157.410
Internet access	Equal variances assumed	4.776	.030*	-1.091	308
	Equal variances not assumed			-1.029	208.547

\*=p<.05

**Table 7 Independent Samples Test**

		t-test for equality of means	
		Sig. (2-tailed)	Mean difference
Computer access	Equal variances assumed	.010*	-.058
	Equal variances not assumed	.025	-.058
Internet Access	Equal variances assumed	.276	-.025
	Equal variances not assumed	.305	-.025

\*=p<.05

## Results Question Two

To address Research Question 2: Is there a difference among student demographic factors of gender, ethnicity and socioeconomic status<sup>3</sup> and college readiness?

The results reflected differences for gender, and socioeconomic status independent demographic variables using a one-way ANOVA. The equation for sample size is derived from the equation for the statistical test. In a t-test the equation for the test is

$$t = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{\sqrt{\frac{\sigma_1^2}{n} + \frac{\sigma_2^2}{n}}}$$

The derived equation for sample size is

$$n = \left( z_{1-\alpha/2} + z_{1-\beta} \right)^2 \frac{(\sigma_1^2 + \sigma_2^2)}{(\mu_1 - \mu_2)^2}$$

A one-way ANOVA between subjects was conducted to show a difference of gender on college readiness mastery and no mastery conditions. There was a significant role on gender for college readiness; since the  $p < .05$  level for three conditions [F (1, 4.549) = 1.079,  $p = .034$ ] (See table 8).

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<sup>3</sup> Socioeconomic status = free/reduced lunch and household income.

Table 8: Gender One Way ANOVA

Gender/Readiness Mastery					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.079	1	1.079	4.549	0.034*
Within Groups	72.075	304	0.237		
Total	73.154	305			

\*= $p < .05$

a. Post hoc tests are not performed for Gender/readiness Mastery because there are fewer than three groups.

Next, the one-way ANOVA was conducted for free/reduced lunch to find a difference for college ready mastery and no mastery conditions. The results show a significance of free/reduced lunch on college readiness mastery at the  $p < .05$  level for the three conditions [ $F(1, 13.290) = 3.025, p = .01$ ]. See table 9.

Table 9: Free/Reduced Lunch One-way ANOVA

Free/Reduced Lunch Readiness mastery					
	Sum of squares	df	Mean square	F	Sig.
Between groups	3.025	1	3.025	13.29	.00*
Within groups	52.804	232	0.228		
Total	55.829	233			

\*= $p < .05$

a. Post hoc tests were not performed for free/reduced lunch because there are less than three groups.

Another one-way ANOVA between subjects was conducted on Race/Ethnicity on college readiness mastery and no mastery conditions. Initially, there was a difference of race/ethnicity on college readiness mastery using the  $p < .05$  level for three conditions [ $F(3, 3.62 = 2.529, p = .014)$ ]. However, there was a concern for a Type I error, so post hoc testing was conducted using Dunnett T3 and no differences were found between groups, since the variances were skewed and the sample size uneven for black/white. Furthering the analysis, the Levene test (see Table 10) was used for homogeneity and variances for significance found among both variables. The assumption is the variances are unequal and it became necessary to use Dunnett eliminating Bonferroni and Tukey due to principle that variances must be equal. Therefore if the assumption was equal variances, for example, with race/ethnicity using Bonferroni and Tukey measure a difference would have been noted between Black and White students related to college readiness (see table 11). However, the illustrated distributions are different by evidence of a larger disparity of sample size, and by the results provided by Dunnett's measure, which showed no significance of the race/ethnicity variable, and a Type 1 error could have occurred (see table 12).

Table 10: Test of Homogeneity of Variances

Race/ethnicity Readiness Mastery			
Levene Statistic	df1	df2	Sig.
6.012	3	303	0.001*

\*= $p < .05$

- a. Levene test assumption of equal variances.
- b. Using Bonferroni and Tukey measures a difference would have been noted between Black and White students related to college readiness.

Table 11: Race/ethnicity One-way ANOVA

Readiness Mastery					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.529	3	0.843	3.62	0.014*
Within Groups	70.566	303	0.233		
Total	73.094	306			

\*= $p < .05$

- a. Using Bonferroni and Tukey measures a difference would have been noted between Black and White students related to college readiness.



Table 12: Race/ethnicity Dunnett T3 Measure

Race/ethnicity Dependent Variable: Readiness Mastery					
(I) race/ethnicity	(J) race/ethnicity	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval  Lower Bound
Asian	Black	-0.163	0.143	0.829	-0.56
	Hispanic	-0.072	0.124	0.992	-0.42
	White	0.087	0.118	0.973	-0.25
Black	Asian	0.163	0.143	0.829	-0.23
	Hispanic	0.091	0.104	0.942	-0.19
	White	0.249	0.096	0.074	-0.02
Hispanic	Asian	0.072	0.124	0.992	-0.28
	Black	-0.091	0.104	0.942	-0.37
	White	0.159	0.064	0.084	-0.01
White	Asian	-0.087	0.118	0.973	-0.42
	Black	-0.249	0.096	0.074	-0.51
	Hispanic	-0.159	0.064	0.084	-0.33

a. Post Hoc testing conducted by Dunnett T3 showed no significance of  $p<.05$  for race/ethnicity on college readiness mastery and no mastery conditions.

Lastly, a one-way ANOVA between subjects was conducted of the household income on college readiness in mastery and no mastery conditions. There was a difference on the role of household income on college readiness mastery at the  $p<.05$  level for the three conditions [ $F(305, 8.170) = 7.160, p = .01$ ], (see table 13).

Upon further analysis by using all three measures of Bonferroni, Tukey or Dunnett for household income did not make a difference whether assumed for equal variances or not.

Yet, there was a significant difference for household income over \$100,000 compared to the other groups of \$0-24,000; \$25,000-49,000; \$50,000-75,000 household income.

Table13: Household Income Readiness Mastery ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.16	4	1.79	8.17	.01*
Within Groups	66.827	305	0.219		
Total	73.987	309			

\*=p<.05

a. Household Income showed a significance of (p=.01) between groups.

Table 14: Household Income Post Hoc Test Tukey HSD

Dependent Variable: Readiness Mastery					
	(I) household income	(J) household income	Mean Difference (I-J)	Std. Error	Sig.
Tukey HSD	under 24K	25K - 49K	0.163	0.083	0.285
		50K - 75K	0.118	0.093	0.71
		75K - 99K	0.256	0.094	0.052
		over 100K	.400*	0.074	.01*
	25K - 49K	under 24K	-0.163	0.083	0.285
		50K - 75K	-0.045	0.095	0.989
		75K - 99K	0.093	0.095	0.867
		over 100K	.237*	0.076	0.017*
	50K - 75K	under 24K	-0.118	0.093	0.71
		25K - 49K	0.045	0.095	0.989
		75K - 99K	0.138	0.104	0.676
		over 100K	.282*	0.087	0.011*
	75K - 99K	under 24K	-0.256	0.094	0.052
		25K - 49K	-0.093	0.095	0.867
		50K - 75K	-0.138	0.104	0.676
		over 100K	0.144	0.087	0.466
	over 100K	under 24K	-.400*	0.074	.01*
		25K - 49K	-.237*	0.076	0.017*
		50K - 75K	-.282*	0.087	0.011*
		75K - 99K	-0.144	0.087	0.466

\*= $p < .05$ 

a. Tukey HSD showed a difference for household income over \$100,000 compared to the other groups of \$0-24,000; \$25,000-49,000; \$50,000-75,000 household income.

Table 15: Household Income Post Hoc Test Bonferroni

Dependent Variable: Readiness Mastery					
	(I) household income	(J) household income	Mean Difference (I-J)	Std. Error	Sig.
Bonferroni	50K - 75K	75K - 99K	0.138	0.104	1
		over 100K	0.282	0.087	0.013*
	75K - 99K	under 24K	-0.256	0.094	0.067
		25K - 49K	-.093*	0.095	1
		50K - 75K	-0.138	0.104	1
		over 100K	0.144	0.087	0.999
	over 100K	under 24K	-0.4	0.074	.01*
		25K - 49K	-.237*	0.076	0.02*
		50K - 75K	-0.282	0.087	0.013*
		75K - 99K	-0.144	0.087	0.999

\*=p<.05

a. Bonferroni showed a difference for household income over \$100,000 compared to the other groups of \$0-24,000; \$25,000-49,000; \$50,000-75,000 household income.

Table 16: Household Income Post Hoc Test Dunnett T3

	(I) household income	(J) household income	Mean Difference (I-J)	Std. Error	Sig.
Dunnett T3	under 24K	25K - 49K	0.163	0.088	0.489
		50K - 75K	.118*	0.1	0.928
		75K - 99K	0.256	0.098	0.097
		over 100K	0.4	0.073	.01*
	25K - 49K	under 24K	-0.163	0.088	0.489
		50K - 75K	-0.045	0.102	1
		75K - 99K	.093*	0.1	0.986
		over 100K	.237*	0.076	0.022*
	50K - 75K	under 24K	-.118*	0.1	0.928
		25K - 49K	0.045	0.102	1
		75K - 99K	0.138	0.11	0.901
		over 100K	0.282	0.089	0.023*
	75K - 99K	under 24K	-0.256	0.098	0.097
		25K - 49K	-.093*	0.1	0.986
		50K - 75K	-0.138	0.11	0.901
		over 100K	0.144	0.086	0.634
	over 100K	under 24K	-0.4	0.073	.01*
		25K - 49K	-.237*	0.076	0.022*
		50K - 75K	-0.282	0.089	0.023*
		75K - 99K	-0.144	0.086	0.634

\*= $p < .05$ 

a. Dunnett T3 showed a difference for household income over \$100,000 compared to the other groups of \$0-24,000; \$25,000-49,000; \$50,000-75,000 household income.

### **Results Question Three**

To address Research Question 3: Is there a relationship of student self-efficacy and student college readiness?

The survey instrument was designed to measure participants' levels of engagement of student self-efficacy status. Once the responses were collected, Cronbach's Alpha of 0.97 maintains the reliability of the instrument. The 19-question Self-efficacy instrument reflected no significance on college readiness mastery. The Pearson, Kendall Tau and Spearman Rho yielded the same result of no significance at (.996). The instrument was modified to five choices ranked on the instrument. Participants had the following five choices when answering each question: strongly disagree, disagree, maybe, slightly agree, and strongly agree. Strongly disagree was coded as one point, whereas strongly agree was coded as one point. Therefore, the minimum score possible was nineteen and the maximum score possible was 95. Scores ranging from 70 to 95 would indicate a greater degree of engagement than those ranking below 32. The majority of the respondents reported themselves to be indecisive about their self-efficacy status.

However, the questions remained identical to the same form of the valid and reliable instrument chosen for this study. The instrument had a one-scale total and no domains further simplifying the results for college readiness illustrating no significance from the collected data (see Table 17). The collected descriptive data showed no significance for any of the 19 questions creating a flat line result. To conclude no

significant relationship could be found between Self-efficacy on college ready mastery (see Figure 10).

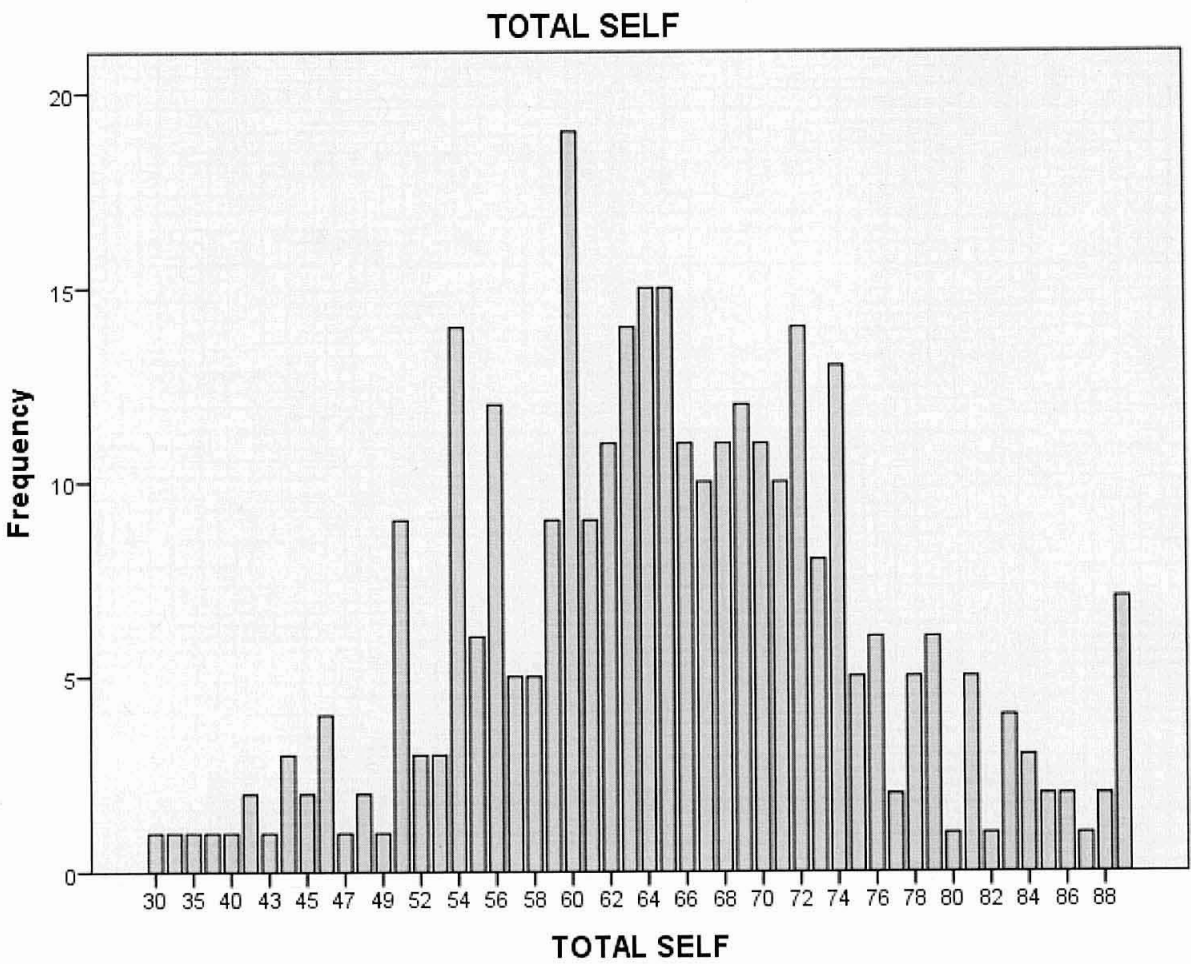
Table 17 Total Self Efficacy Correlations

Correlations			Total SELF	Readiness mastery
Kendall's tau_b	Total SELF	Correlation coefficient	1.000	.000
		Sig. (2-tailed)	.	.996
		N	322	322
	Readiness mastery	Correlation coefficient	.000	1.000
		Sig. (2-tailed)	.996	.
		N	322	322
Spearman's rho	Total SELF	Correlation coefficient	1.000	.000
		Sig. (2-tailed)	.	.996
		N	322	322
	Readiness mastery	Correlation coefficient	.000	1.000
		Sig. (2-tailed)	.996	.
		N	322	322

Note: No significance was determined correlating self-efficacy on college readiness mastery.

Note: Results were evaluated by completing a Kendall Tau and Spearman Rho to correlate between the Total Self-efficacy Score and the Florida Department of Education Educational Data Warehouse student College Ready Mastery score. Results indicated that the correlation was not significant when evaluated from the Total Self-efficacy student score and the student College Readiness Mastery scores. The limitation became noticeable while going through the protocol for the possible type of tests to run a correlation. The Pearson test was eliminated due to the total SELF was a scale variable and readiness mastery was a nominal score. The variables are very dichotomous and binary and limit the depth of statistical data.

**Figure 10 Self-Efficacy**



**Summary of Findings**

In summary, the chapter has reported several statistics and related analysis. In particular, the specific statistical test reported a number of critical information; for research question 1 was the independent sample t-test using nominal data, and noted significance for computer access. The Levene test was of great importance to discover quality of variance. The research question identified the roles of differences on college ready mastery by using a one-way ANOVA selecting three independent variables and one



dependent variable. The post hoc testing was important to check for possible Type I errors claiming data significance.

Furthermore, research question 3 included a huge volume of data into very a manageable data set by using SPSS to find the mean of each of participants' self-efficacy single facto score, which was deemed reliable based on the Cronbach's reliability score of 0.97; and finally the correlation test indicated a need for a non-parametric test as the distribution of samples were "nonnormal" and as a result the Kendall's Tau b test has been performed, - this test reported no relationship out of the 19 factors as having no strong correlations and no statistical significance of student self-efficacy status to college readiness mastery. In contrast, to other demographic variables of gender, race/ethnicity, free/reduced lunch, and self-efficacy status had no significance for college readiness, too. The chapter also reported on some of the supplementary statistics collected from the online student survey from the Class of 2013 student perspective.

## CHAPTER 5: CONCLUSIONS

This chapter provides a brief summary of the study, relates the findings to prior research, and suggests possible directions for future studies.

Currently, cognitive measures are the acceptable practice in education for measuring students' knowledge and ability. In fact, educators have established a common hierarchy ranking cognitive skills at the top and metacognitive skills at the bottom(Conley, 2013). Recent research has shed light on the key elements of college success (Conley, 2003b, 2005; Conley and Bowers, 2008; National Research Council, 2002). Several studies have led to college readiness standards that specify key content knowledge associated with college success (Achieve, the Education Trust, and Thomas B. Fordham Foundation, 2004; ACT, 2004; College Board, 2006; Conley, 2003a, 2003b; Texas Higher Education Coordinating Board, 2008). Therefore, contemporary studies continue to evolve and their outcomes advance our understanding of how students learn, further investigation and educational approaches need to be evaluated.

The process of education reform and the focus of this research study were to include how roles of metacognitive measures influence results on the Florida Department of Education state-mandated computer college-ready assessments. The statistical evidence presented, gathered and analyzed from this research study will benefit students and develop efforts to increase college ready mastery outcomes inclusive of a diverse student population. This study will contribute further information to examine the roles of student technology access, demographic categories of gender, ethnicity, and socioeconomic status; and self-efficacy status, and how they influence college readiness

scores. The study explored the use of metacognitive assessments with traditional cognitive assessments to encompass a greater indicator of student college readiness.

### **Review of Methods and Variables**

The method of research design selected was a quantitative study using only students in their senior year of high school. The research study used a convenient sample in a quasi-experimental setting from one comprehensive high school with a total student population of approximately 3,000. It analyzed the roles of students' technology access, demographic differences, and a metacognitive instrument using self-efficacy to identify patterns and trends that influence college readiness mastery at the secondary level.

The instrument selected from Zimmerman and Kitsantas (2007) was utilized in an online survey composed of 19 self-efficacy questions and other student demographic questions to gather data for analysis. The demographic questions involved differences of gender, race/ethnicity, and socioeconomic status and were analyzed as independent variables against the achieved college readiness mastery dependent variable. Student college readiness scores were collected from the district site of the 2012-2013 school year provided by both Institution Review Boards (IRB) approvals to use the Palm Beach School District EDW college mastery reports identifying yes=mastery and no=no mastery.

The abridged nineteen questions SELF-A instrument (Kitsanatas and Zimmerman, 2007) was used to measure each participant's self-efficacy belief which included reading, note taking, test taking, writing, and studying. However, the outcome was determined as a single factor formula to conclude each participant's score. The higher the self-efficacy scores the greater the internal self-efficacy status.

The hypothesis of this research study was based on results from studies conducted by Goode, 2004; Bandura 2006; and Zimmerman and Kitsantas, 2007 where technology access, demographic differences of gender, race/ethnicity, and socioeconomic status, and self-efficacy influence student college readiness mastery as reported on the Palm Beach School District EDW database from the Florida Department of Education.

## **Summary of Results**

### **Research Question One**

Q1. Is there a difference in college readiness mastery based on student computer and Internet access?

Results from this research question showed a difference for computer access, and surprisingly not for Internet. The explanation sets a trend of results to be synthesized at the end of this discussion toward the importance of computer resources available to students during convenient and accessible time periods. These results indicate that student computer access is significant to college readiness mastery demonstrating evidence for the necessity use of student computers. Unfortunately, the nominal variables cannot statistically conclude any further data and add further depth to conclusions determined by computer access. Although inferential assumptions can be made, this study has no further statistical data.

As for internet access, no significance for students was reported, and did not show a difference on college readiness mastery.

### **Research Question Two**

Q2: Is there a difference among student demographic factors of gender, ethnicity and socioeconomic status and college readiness?

The four independent variables measured for differences against the dependent variable of college readiness mastery were (a) gender, (b) race/ethnicity, (c) free/reduced lunch and (d) household income.

(a) Gender showed a greater difference between groups. The mean results determined that the female gender of the student on mastery of college readiness skills was higher. However, since post hoc testing was unable to be completed since at least 3 variables are needed and only two variables (male/female) were available therefore a statistical conclusion on which gender (male or female) was more likely to meet college readiness mastery was not reached. Noteworthy, even though the sample size was slightly unequal, that females demonstrated a greater achievement on college readiness mastery.

(b) Initially, race/ethnicity showed significance between groups using Tukey and Bonferroni, but upon using Dunnett there was no statistical significance to demonstrate a difference between groups of race/ethnicity of the student. Most importantly, the sample size could have led to a type I error, but a post hoc testing for race/ethnicity only was conducted. This was able to be conducted due to the four groups, which protocol needs three or more groups. Therefore, the results reflect no significant difference.

Also, the nullifying role of race/ethnicity on college readiness mastery implies a balanced and equitable opportunity for college readiness mastery.

(c) Free/reduced lunch was greater within groups, and demonstrating that students who reported to not receive free or reduced lunch and their mastery of college readiness skills showed a difference. A post hoc could not be complete based on the nominal variables of yes/no, and; therefore, conclusions about the direction of the correlation

cannot be determined. Yet, the trend noted earlier based on computer access and SES data collected that those students who do not receive free/reduced lunch have a higher household income and maintain greater access for resources.

(d) Household income was also significant. A post hoc test was conducted on the independent variable of household income with four groups, and was determined significant within groups showed over \$100,000 vs. under \$24,000; \$25,000-\$49,000; \$50,000-\$75,000 for college readiness mastery. In contrast, there was not significance over \$100,000 versus \$75,000-\$99,000 for college readiness mastery. Repeatedly, the pattern of greater computer access, higher SES and household income implies resources as a key factor in this research study against college readiness mastery.

To conclude, the final results of research question two using the independent variables of (a) gender, (b) race/ethnicity, (c) free/reduced lunch and (d) household income, were examined for differences against the dependent variable of college readiness mastery. The roles of gender, free/reduced lunch, and household income show a greater influence on college readiness mastery, but caution for Type II errors could be possible with these result findings due to the limitations of the research design.

### **Research Question Three**

Q3: Is there a relationship between student Self-efficacy and college readiness mastery?

Efficacy expectations have been shown to affect goal setting, choice of activity, amount of effort that will be expended, analytic strategies, and persistence of coping behavior (Bandura, 1977; Wood & Bandura, 1989). Several reviews and theoretical extensions of theory and research findings exist (Bandura, 1986; Gist, 1987; Gist &

Mitchell, 1992; Locke & Latham, 1990; Wood & Bandura, 1989) compared to another contemporary self-efficacy mirroring similar results of this research study (McAuley et al, 2010). With these studies in mind, the flat line results could be different if more time or interventions were introduced during the study implementation phase. Yet, the disappointing results of flat line data re-emphasize the continuous trend toward resources. The professional experience of teacher practitioners value an efficacious student, but these Total Self-efficacy results measured against college ready mastery point to resources, which are inversely opposite of the American dream tenants.

### **Discussion of Results**

#### **Q1. Is there a difference on college ready mastery based on student computer and Internet access?**

The results of computer access as significant determined by the sample T-test was diminished by the designed nominal independent variables of computer access and Internet access. The significance of the presented data would have been more interesting if the study could have determined a deeper context statistical of other tests and gathering more data to analyze the result further.

However, the descriptive data was relevant in the top three places besides home participants' accessed computers. The top locations selected were school, work/public places, and friend/other family house. Student participants continue to access technology on a routine basis at very public and diverse locations.

#### **Q2: Is there a difference between student demographic factors of gender, ethnicity and socioeconomic status and college readiness?**

A point to further identify the significance of gender led to the rerunning of the tests to determine the sample size and limited nominal variable of scope of detail could not answer with confluence the more interesting questions determined by the final result.

The most interesting feature of the data analysis was the post hoc testing and the risk of a Type 1 error. The protocol of knowing if the variances were equal or unequal determines which tests to run, and by whom, could lead to a false claim of significance. Promoting a test check combined with close analysis determines solid results. Therefore, if the Dunnett test was not run for the post hoc tests of the race/ethnicity and the household income a Type 1 error could have occurred and significance could have been claimed within groups.

### **Q3: Is there a relationship between student self-efficacy and student college readiness?**

The result of research question three was my most surprising. The social cognitive framework of Bandura and the self-efficacy instrument Zimmerman and Kitsantas was the hallmark of this research study. Professional experience and theory were playing a combined role to evaluate a 19-question instrument full of data by 322 student participants. However, the results from the analysis of the independent variable (Total Self scores) and the dependent variable (college readiness mastery) determined that no significance was evident on a correlation between the two.

Moreover, the flaw of the research design included the use of a single factor instrument and a nominal dependent variable. Consequently, this limited further tests of correlation and without further tests and variables my data returned a flat line data of no significance.



### **Limitations**

As with all studies, this study was subject to limitations, which can potentially influence conclusions drawn from the dataset. First, because the data is a convenient sample, in a quasi-experimental setting and causal inferences should not be generalized regarding the effects of measured variables. For example, rather than concluding that computer access plays a role in college readiness, it is more appropriate to conclude computer access tends to be positively related with college readiness mastery. Thus, only correlational inferences can be drawn, not statistical evidence.

Another limitation of the study is potential respondent biases which might constitute to a systematic error. This is common when using survey responses from the same source because a single respondent for each survey can only yield one perspective. Other participants within the same senior class and same school center may perceive conditions to be significantly different thus leading to Type I error correlations (Bagozzi, 1980). Several precautions were taken to minimize the effects of common-method bias as suggested by Podsakoff et al. (2003). The dependent variable of college readiness mastery was taken from a database and the independent variables were separated into different sections of the survey instrument. Different question formats were used for each set of variables.

Another possible limitation, was the design of the dependent variable of college readiness mastery as a nominal variable, which was identified as only yes=mastery or no=no mastery. The dependent variable was too simplistic and limits the statistical measures to answer in a deeper context to analyze and form specific conclusions relevant to my research study.

Moreover, the flaw of the research survey instrument which included the use of a single factor formula and a nominal dependent variable. This limitation became an obstacle to clarify richer results of the research study. For example, the Pearson test was eliminated due to the Total Self-efficacy single factor score formula, and the College Readiness Mastery, which was a nominal score of yes/no.

Furthermore, the research study's variables for each research question are dichotomous and binary and limit the depth of statistical data.

Consequently, this limited further tests of correlation, and differences which affected interesting data remain inconclusive from this study. Therefore, without further tests to identify variables my data returned a flat line data of no significance, and no further statistical data to contribute from this study. As a result, caution should be used when drawing conclusions from the results of this paper.

### **Recommendations**

Based on the results of this research and literature review, this section offers recommendations for policy makers, modifications to the survey and future research.

Policy makers at both the federal and state level need to develop a common definition for college readiness standards and guidelines to implement technology integration weaved within the curriculum. This framework addresses the three main issues of student computer access, using technology as a tool for learning, and allocation of budgets pertaining to college readiness resources. A clear policy needs to be established that ensures all students have access to technology in the classroom. In addition, scheduled dates need to be prioritized to afford each enrolled student a

computer. Finally, to partnership with state and local policymakers to generate immediate possibilities for students to bring refurbished, rented, or other innovative ways students can take ownership of the computer and their learning experience.

Also, this study adds to all the data available concerning the Digital Divide. Researchers interested in this topic could use this study as a basis to conduct similar investigations, and conduct additional research on student Internet experiences as it relates to college readiness.

To further examine the role of demographics presented from this study would be enriched if a mixed method approach was utilized to establish impact of the number of persons in the household and their perspectives of socioeconomic status on college readiness.

To truly extract and identify the significant differences of roles between metacognitive measures such as computer/internet access, demographic differences and self-efficacy and cognitive measures to identify college readiness mastery, we must be able to examine each from different perspectives as modeled in Bandura's social cognitive theory (Bandura, 1989). The results presented in this research study are relevant to the levels of students' needs to earn college ready mastery, which include other organizational and technical resources provided at school centers and beyond. The implications put forth from this research paper's results could be expanded to set comprehensive school center accommodations determined by the educational leadership to identify the level of resources needed to reach effectiveness.

After using the data from the selected abridged 19 question SELF-A survey instrument, it became apparent there are weaknesses to the survey. A key limitation to

the survey was the lack of domains to develop rich data for each of the answered questions, and the single factor formula. Also, in the survey a common set of terms needs to be clearly defined for the survey.

Using this study's approach could help further refine our understanding of the dimensionality of the roles of computer/Internet access, demographic differences, and Self-Efficacy status as a reform to increase student college readiness mastery.

### **Implications for Practice**

For education practitioners, it can provide a greater and more insightful understanding of students' perspectives of needs to become college ready and to provide terminology that can be used to effectively communicate with different stakeholders within and across district boundaries.

Another potential avenue for extending research along the lines of which was conducted in this dissertation include using the framework developed by Bandura et al. (1992). The framework developed by Bandura (see Figure 4: Bandura's Social Cognitive Theory, 1989) included environmental factors which represent access, the personal factors are represented by the demographic differences, and the behavior factors are represented by the self-efficacy status.

Also, there is a need for replication of studies such as the longitudinal study conducted by Caprara et al., (2008) which focused on the central role played by perceived self-regulatory efficacy in one's academic self-development and functioning. Bandura (2006b; in press) also talked about the capacity to regulate one's thoughts, motivation, affect, and action through self-reactive influence and how this constitutes one of the core properties of human agency within the conceptual framework of social cognitive theory.

Self-regulatory efficacy was selected as a key factor because of its growing primacy in contemporary life. Information technologies are globalizing knowledge and altering educational systems (Bandura, 2002). This framework could be used to further explore the relationship between threats and organizational characteristics.

Furthermore, Florida state policy makers support state policies 1008.30(3) F.S. and State Board Rule 6A-10.0315<sup>4</sup>. By understanding legislative efforts to identify specific classes to manage college readiness skills to increase student mastery key district policies could more effectively concentrate on the roles of access and demographic differences directing efforts to increase student manageability toward success.

Also, to prioritize non-cognitive student portfolios discussed in this dissertation, may open professional dialogue to pin-point strategies to increase college readiness mastery specific to the Florida Department of Education school center performance criteria.

The results of the current study are also relevant to practitioners. First, the analysis of the roles of student computer/internet access, demographic differences, and self-efficacy on college readiness mastery can be used to continue further dialogue of significant variables of students' strengths and weaknesses to assess. Also, it can enable school leaders to compare their own school centers to similar school centers in terms of their student population, budget, size and location. Such an approach would allow comparisons to specific types of measures in use by their district and compare with other

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<sup>4</sup>. This statute requires to schools to evaluate the college readiness of all students before the beginning of grade twelve, regardless of their postsecondary plans. The statute, also, states schools shall administer the Postsecondary Education Readiness Test (PERT) or equivalent test identified in state Board Rule 6A-10.0315, F.A.C., to all students who score at Level two or Level three on the reading portion of the grade ten FCAT or Level two, three, or four on the mathematics assessments (2011 HB 1255).

school districts enabling them to gain insight into how to effectively manage consistent student mastery of college readiness defined by the state department of education.

This research could also be used by education leaders to gauge their current student college readiness status. Thereby, based on their analysis, they could then target specific types of school reform efforts to obtain the necessary degree of effectiveness to increase student mastery. Such an approach would allow the district to more judiciously allocate funding to those schools in need of funding for computer/internet access, demographics and self-efficacy metacognitive initiatives.

### **Summary**

The goal of this research study was to expand on the awareness about the relevance of the digital divide and to identify recommendations to prepare students by understanding the significance of the different roles metacognitive assessments influence their academic experience with computer/Internet access and expertise, demographic differences, and self-efficacy status. The research design implemented during this study enabled statistical data to be gathered and explored through the individual perspective of high school students in transition from their last year or senior year of high school to a post-secondary institution. The application of Bandura's social cognitive theory to anchor this paper enables the social cognitive lens to understand the roles of metacognitive measures in education to enrich Florida State standards for preparation of students to achieve college readiness mastery, and the choices to empirically assess the differences between metacognitive measures and cognitive assessments measuring college readiness mastery.

Not only can Educational leaders use the results from this study to assist their current student population needs, but also as a way to prescriptively achieve a desired level of college ready mastery by prioritizing efficient use of computer resources in classrooms, computer labs, media centers, and other innovative student resources necessary to maintain and increase student learning outcomes measured by the Florida Department of Education, and to various measures relative to counterparts within districts of similar size.

The quantitative method selected in this research study examined the roles and the numerous complexities of the Digital Divide's phenomena, demographic, and self-efficacy status affecting current student expectations for college readiness mastery. As represented in this study, the interesting results of finding differences with student computer access and household income are significant roles influencing resources allocation for college readiness mastery. While there appears to be no significant correlation between student Total Self-efficacy scores and College Readiness Mastery scores, a better research design could challenge these statistical results. These results may indicate that there is a lack of responses needed to generalize a population.

Analyzing the demographic differences evaluated in this research study can continue to bring awareness and further conversation to educational leaders to develop comprehensive solutions to reform the current standards, so more students can meet college readiness mastery cut scores declared by the Florida Department of Education (see Table 4).

The sample of student participants utilized in this research study can serve as an example of how important the role of metacognitive measures can be merged to increase

student learning outcomes. In addition, the results gained from this study combined with the empirical evidence gathered throughout this research study will help refine our understanding of the relationship between and within the found significant differences determined by the roles of non-cognitive measures to cognitive measures identifying college readiness mastery.

Finally, the focus of the social cognitive lens used in this study, initiates as evidence to frame an organization's use of cognitive measures and metacognitive measures. These would include: student limitation to computer access, demographic differences, which resulted in this study showing statistical data to affect college readiness mastery. Also, this research study provided evidence for resource allocation to make a difference on college readiness mastery. Further research into the relationships between non-cognitive and cognitive measures and how districts organizational context affects students' college readiness status can provide practitioners with valuable tools to determine how to increase the overall number of students transitioning to college ready mastery status, and to achieve the American dream.



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## **Appendix A: Voluntary Informed Consent Form**

You are invited to participate in my research study. Please read this carefully.

The form provides you with information about the study. The Principal Investigator (Kristen Rojas or representative) will answer any questions you may have. You may ask questions at any time about anything you don't understand before deciding whether or not to grant permission to participate in this study. Your participation is entirely voluntary and you can refuse to participate without penalty or loss of benefits to which you are otherwise entitled. You acknowledge you are at least 18 years of age; and or guardian/parent granting permission, and that you do not have medical problems or educational barriers that preclude understanding of explanations contained in this authorization for voluntary informed consent.

The purpose of this research study: The study is about the Digital Divide and the correlation between student technology access at home/school and self-efficacy status impacting college ready assessments. There will be approximately 800 seniors at Boca Raton Community High School invited to participate in this survey. The survey is completely online, and an individual college readiness scores (ACT/SAT/PERT/Accuplacer) will be used from the Educational Data Warehouse (EDW) provided with permission from the Palm Beach County School District IRB approval.

### **Procedures**

The survey is completely electronic and begins by clicking "Next" button at the end of this form. You will be able to complete this online questionnaire survey in private in approximately 15 minutes. If you choose not to participate click "Exit this survey".

The web-based survey instrument utilized from SurveyMonkey.com. Survey Monkey uses Secure Socket layer (SSL) encryption for both the survey link and survey pages during transmission to ensure participant confidentiality and survey security. Survey Monkey will not record personal identification information. Participants will be advised of the browser type and version necessary for proper encryption on the consent form. All participants will remain confidential to the primary researcher.

If you agree to participate or grant permission to your son/daughter, after you read this consent form, then you may proceed to the Digital Divide Access questionnaire (DDAQ)/Self-A Form Survey (SAFS). You will complete the DDAQ/SAFS that contains two parts that contains 6/YES, NO; 4/Dropdown Menu; 20/Likert scale style questions. You will submit your questionnaire by clicking on “submit” at the end of the survey.

#### **Possible Risks or Discomforts**

This study involves minimal risk. In addition, participation in this study requires a minimal amount of your time and effort.

#### **Possible Benefits**

There may be no direct benefit to you in participating in this research study. But, knowledge may be gained which may help you identify your own strengths and opportunity for growth in relation to assessing your personal access and self-efficacy status.

#### **Financial Considerations**

There is no financial compensation for your participation in this research study. There are no costs to you as a result of your participation in this study.

#### **Confidentiality**

Every effort will be made to maintain confidentiality. Your identity in this study will be treated as confidential. Only the researcher (Kristen Rojas) will know who you are, if you choose to disclose that information. During the survey you will automatically be assigned a code number. Data will be coded with that number. Confidentiality will be maintained to the degree permitted by the technology used. Specifically, no guarantee can be made regarding the interception of data sent via the Internet by any third parties. Participation in this study is voluntary and agreeing to the consent form will constitute your informed consent and permission granted for your son/daughter, to participate in the study. Your email address and individual responses will not be identified nor tracked as part of data collection. The results of this survey may be published in a dissertation, scientific journals or presented at professional meetings. In addition, your individual privacy will be maintained in all publications or presentations resulting from this survey.

All the data gathered during this survey, which were previously described, will be kept strictly confidential by the researcher. Data will be collected using Secure Sockets layer (SSL) encryption from the online web survey host. SurveyMonkey.com and stored on a password protected computer at the home of the primary researcher and hard copies of cumulative survey results will be stored in locked files and destroyed after five years after the end of the research collection. All information will be held in strict confidence and will not be disclosed unless required by law or regulation.

### **Right to Withdraw**

You are free to choose whether or not to participate in this study. There will be no penalty or loss of benefits to which you are otherwise entitled if you choose not to participate.

**Contacts/Access to Consent Form**

Any further questions you have about this study, or your participation in it, either now or any time in the future, will be answered by Kristen Rojas (Principal Investigator) who may be reached at [REDACTED] and Dr. Mayra Ruiz Camacho faculty advisor who may be reached at [REDACTED]. For any questions regarding your rights as a research subject you may call Dr. Theodore Wasserman, Chair of the Lynn University Institutional Review Board for the protection of Human Subjects at [REDACTED]. If any problems arise as a result of your participation in this study, please call the Principal Investigator Kristen Rojas and the faculty advisor Dr. Mayra Ruiz Camacho immediately. Please print a copy of this consent form for your records.

If you wish to participate please click "Next" otherwise click "Exit this Survey" if you do not want to participate.

\_\_\_\_\_  
Interviewee Witness Date

\_\_\_\_\_  
Legal guardian (if interviewee is under 18)

<https://www.surveymonkey.com/s/SEQSBRCHS2013>

## Appendix B: Lynn IRB Approval



# LYNN UNIVERSITY

3601 North Military Trail  
Boca Raton, FL 33431-5598

Via Email: [REDACTED]

November 15, 2012

Kristen Rojas  
[REDACTED]  
[REDACTED]

Dear Kristen:

The submission that you have submitted, "Digital Divide: The Impact of Student Access and Self-Efficacy Influencing College Readiness", has been granted for expedited approval by the Lynn University's Institutional Review Board.

You are responsible for complying with all stipulations described under the Code of Federal Regulations 45 CFR 46 (Protection of Human Subjects). This document can be obtained from the following address:

<http://phrp.nihtraining.com/users/login.php>

Form 8 (Termination Form)

[https://my.lynn.edu/ICS/Portlets/ICS/Handoutportlet/viewhandler.ashx?handout\\_id=b1e2f159-ce0f-4774-b727-3dd56c4bfb34](https://my.lynn.edu/ICS/Portlets/ICS/Handoutportlet/viewhandler.ashx?handout_id=b1e2f159-ce0f-4774-b727-3dd56c4bfb34) needs to be completed and returned to Ms. Teddy Davis [REDACTED] when you fulfill your study. You are reminded that should you need an extension or report a change in the circumstances of your study, an additional document must be completed.

For further information, please click on the following

<http://www.hhs.gov/ohrp/humansubjects/anprmchangetable.html>

Good luck in all your future endeavors!

Warmest regards,



*Dr. Theodore Wasserman*

Dr. Theodore Wasserman

IRB Chair

Cc: Dr. G. Cox  
Dr. M. Camacho  
File #2012-025  
Dr. A. Kosniztky

/td

## Appendix C: Palm Beach County School District IRB Approval



THE SCHOOL DISTRICT OF  
PALM BEACH COUNTY, FLORIDA

MARK HOWARD  
DIRECTOR

FRANK RODRIGUEZ, Ph.D.  
ASSISTANT SUPERINTENDENT, QUALITY ASSURANCE

DEPARTMENT OF RESEARCH, EVALUATION, AND ASSESSMENT  
3300 Forest Hill Boulevard, Suite B-250  
West Palm Beach, FL 33406

[www.palmbeachschools.org/dre/](http://www.palmbeachschools.org/dre/)

December 5, 2012

Ms. Kristen Rojas  
[REDACTED]

Dear Ms. Rojas:

The Superintendent's Research Review Committee has approved your request to conduct your research entitled, ***Digital Divide: The Impact of Student Technology Access and Self-Efficacy Status on College Readiness***, in the School District of Palm Beach County (the District). The purpose of this study is to examine evidence for the existence of the Digital Divide in computer and Internet access and self-efficacy factors that influence digital access in high school seniors.

According to our District's procedures, school participation is voluntary and subject to the authority of the school administration.

As you conduct your research, please use the following guidelines:

- Contact no schools other than the Boca Raton High School;
- When contacting the school administrator, please provide a copy of your approval letter;
- Obtain written permission (active consent) from the parent or guardian and written permission from students (assent form) and provide a copy of all completed and signed active consent forms and assent forms to the principal or principal's designee before proceeding with any student subjects;
- Summarize findings for reports prepared from this study and do not associate responses with a specific school or individual (information that identifies our District, schools, or individual responses will not be provided to anyone except as required by law).

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The School District of Palm Beach County – Rated “A” by the Florida Department of Education 2005 - 2012  
“Home of Florida's first LEED Gold Certified School”  
[www.palmbeachschools.org](http://www.palmbeachschools.org)

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Page 2 of 2  
Ms. Kristen Rojas  
December 5, 2012

If your research requires the use of additional resources in the future, you must submit a written request to this office and then wait for a response before proceeding. You must submit one copy of the study results to the Department of Research and Evaluation no later than one month after completion of the research.

Thank you for your interest in our District.

Sincerely,



Mark Howard  
Director, Research, Evaluation, and Assessment

MH/RP/ts

cc: Geoff McKee, Principal, Boca Raton Community High School

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The School District of Palm Beach County – Rated “A” by the Florida Department of Education 2005 - 2012  
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## Appendix D: SELF Abridged Form (Zimmerman & Kitsantas, 2007)

*Table 1.* Means, standard deviations, and factor loadings for the SELF-A

Questions	<i>M</i>	<i>SD</i>	Factor loading
1. When you miss a class, can you find another student who can explain the lecture notes as clearly as your teacher did?	77.29	12.14	.77
2. When your teacher's lecture is very complex, can you write an effective summary of your original notes before the next class?	74.28	15.17	.86
3. When a lecture is especially boring, can you motivate yourself to keep good notes?	73.14	15.14	.77
4. When you had trouble understanding your instructor's lecture, can you clarify the confusion before the next class meeting by comparing notes with a classmate?	74.77	14.35	.82
5. When you have trouble studying your class notes because they are incomplete or confusing, can you revise and rewrite them clearly after every lecture?	76.61	15.46	.80
6. When you are taking a course covering a huge amount of material, can you condense your notes down to just the essential facts?	75.92	12.84	.82
7. When you are trying to understand a new topic, can you associate new concepts with old ones sufficiently well to remember them?	77.61	13.05	.86
8. When another student asks you to study together for a course in which you are experiencing difficulty, can you be an effective study partner?	76.49	13.02	.82
9. When problems with friends and peers conflict with schoolwork, can you keep up with your assignments?	75.90	14.39	.79
10. When you feel moody or restless during studying, can you focus your attention well enough to finish your assigned work?	72.79	14.25	.82
11. When you find yourself getting increasingly behind in a new course, can you increase your study time sufficiently to catch up?	75.30	14.00	.81
12. When you discover that your homework assignments for the semester are much longer than expected, can you change your other priorities to have enough time for studying?	76.46	14.21	.87
13. When you have trouble recalling an abstract concept, can you think of a good example that will help you remember it on the test?	77.83	12.76	.83
14. When you have to take a test in a school subject you dislike, can you find a way to motivate yourself to earn a good grade?	75.29	14.16	.88
15. When you are feeling depressed about a forthcoming test, can you find a way to motivate yourself to do well?	76.28	12.51	.81
16. When your last test results were poor, can you figure out potential questions before the next test that will improve your score greatly?	77.12	12.72	.76
17. When you are struggling to remember technical details of a concept for a test, can you find a way to associate them together that will ensure recall?	75.65	13.36	.80
18. When you think you did poorly on a test you just finished, can you go back to your notes and locate all the information you had forgotten?	79.57	14.16	.79
19. When you find that you had to "cram" at the last minute for a test, can you begin your test preparation much earlier so you won't need to cram the next time?	77.07	12.44	.83

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with Group